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VOLUME XI
JUNE, 1932 to APRIL, 1933

BALTIMORE
THE WILLIAMS & WILKINS COMPANY
1933

Psychology
Direct
10-15-34

Measuring the Factors That Make a Job Interesting

By S. N. F. Chant, *University of Toronto*

Industrial psychology as a science is dependent on development of methods for quantitative measurement of variables. Dr. Chant shows how one of Thurstone's techniques for attitude measurement may be used to determine the relative importance of various factors that make a job interesting.

This paper illustrates the applicability to personnel problems of one of Thurstone's methods for the measurement of attitude and opinion. The method is employed for measuring the relative importance of twelve selected factors pertaining to any job for a group of male employees between the ages of seventeen and twenty-one. The assumption is made that the degree of importance assigned to any factor in a job will be commensurate to its effectiveness as an agency for arousing and sustaining the employee's interest in his job. Suggestions are made relevant to the value of the results in vocational guidance and in training supervisors.

EMPHASIS upon the importance of arousing and retaining a worker's interest in his job is scarcely a recent development in personnel work. Research studies in this field however are surprisingly few and of those that have been carried out only a small number are quantitative in nature. The quantitative studies that are available have been directed almost entirely towards measurement of the interests of individual workers rather than towards the investigation of interest-arousing factors inherent in the job.

It is the purpose of this study to illustrate the use of a particular quantitative method for determining the relative importance to workers of certain factors in a job. It is assumed that the presence of those factors that are considered to be of importance by the workers will arouse and retain interest in the job.

The quantitative method employed in this study is one developed by Thurstone for the measurement of attitudes. This method, which is a modification of the well established psycho-physical method of paired comparison, is outlined in detail in Thurstone's article, "An Experimental Study of Nationality Preferences," in *The Journal of General Psychology*, Vol. 1, 1928. The sensitiveness of this method as a measuring technique is demonstrated by Thurstone's studies on the effect of moving pictures upon the attitudes of school children.

The subjects for this investigation

were two hundred and fifty young men between the ages of 17 and 21 all of whom were employed when this study took place. The subjects are divided into two groups: (1) One hundred employees of a large department store, and (2) one hundred and fifty subjects employed in a wide variety of occupations and belonging to the Young Men's Department of a Y. M. C. A. These two groups are kept separate for purposes of this study.

After consultation with a group of twenty-two department store managers and supervisors, the following twelve factors were selected for the purpose of evaluating their importance in any job:

Opportunity for advancement
Good boss
Opportunity to learn a job
Steady work
High pay
Good hours
Opportunity to use your own ideas
Opportunity to be of public service
Easy work
Good working companions
Clean work
Comfortable working conditions

Each of these factors was paired with every other factor to give sixty-six paired items. These paired items were printed in a list in chance order. For example, the first three paired items in the list were:

Good working companions	—Good boss
Steady work	—Easy work
Good hours	—Good working companions

The complete set of paired items was submitted to each of the subjects with the following printed instructions:

"This is a study to determine what features of a job are most important. In the following list of paired items you are to underline the one item of each pair that you consider to be the more important to you in a job. For example the first pair is: Good working companions—good boss. If you consider it more important to have good working companions rather than a good boss underline *good working companions*. If you consider it more important to have a good boss rather than good working companions underline *good boss*. Be sure to underline one item of each pair. You need not sign your name."

The subjects retained the forms for one week before returning them.

The returns were dealt with according to Thurstone's method using the following formula to determine the scale differences:

$$S_1 - S_3 = \frac{\sqrt{2}}{n} \Sigma (x_1 k - x_3 k)$$

The results were then drawn up in scale form with 5 accepted as an arbitrary origin as shown in figure 1.

On examining the scales obtained from the data returned by the two groups we see that there is striking agreement between them. This is to be expected since the two groups are similar in age spread and they are quite similar in social and economic status. The reliability therefore of the scaling method is indicated indirectly by the agreement of the results obtained from these similar groups.

The only significant discrepancy in the two scales is with regard to the values assigned to "opportunity to be of public service." That the Y. M. C. A. group assigned a considerably higher degree of importance to this item than did the store group can

be attributed probably to the emphasis placed upon service in the study groups and addresses which are extensively attended by the Y. M. C. A. members. It would appear therefore that this scaling method is sensitive to such influences. This is in agreement with what Thurstone found in his studies of the effect of moving pictures upon the attitudes of school children.

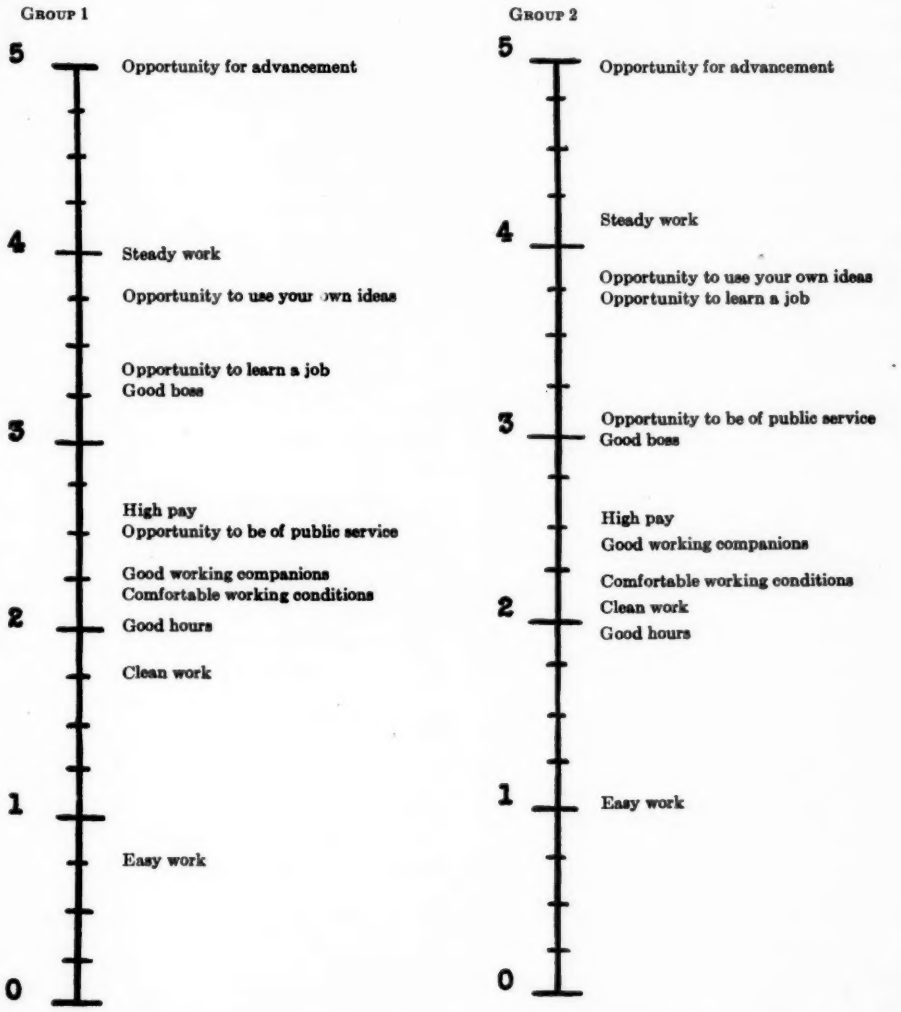

FIG. 1. SHOWING THE JOB FACTORS SCALED FOR IMPORTANCE WITH 5 AS ORIGIN FOR GROUP 1 (100 DEPARTMENT STORE EMPLOYEES) AND FOR GROUP 2 (150 Y. M. C. A. MEMBERS)

The high values given to "steady work" in both scales may be attributed in some slight degree to the fact that the study was carried out at a time

when there existed a considerable degree of unemployment and jobs were becoming scarce as well as uncertain.

The values assigned to all items must be interpreted with reference to the age range and social status of the subjects employed in the experiment. It is conceivable that marked differences may occur with a group of older employees as subjects. For example "opportunity for advancement" may lose some of its importance with an older age group and such factors as "high pay," "good hours," and "comfortable working conditions" exceed in importance "opportunity to learn a job."

The results of this investigation were found to be useful in various ways. In general, their value rests upon the importance of transmuting vague beliefs into quantitative terms. It is conceivable that a well informed person could have anticipated the results of this investigation with a high degree of accuracy. Being able to measure however lends a sanction to the findings that is rarely present in non-quantitative data.

The results were used as a basis for discussion with groups interested in vocational guidance and in staff and supervisor training. With the vocational guidance group it was shown that the scale constitutes one basis for evaluating jobs. An attractive job should offer those points which are rated high on the scale. It was also pointed out to this group that, after accepting employment, these factors became operative only in so far as the employee availed himself of the opportunities presented by the job.

With the supervisor training group the scale was valuable in pointing out those things that make for a good boss. A good boss is one who promotes particularly the factors that are above the item 'good boss' on the scale and only to a less degree those below it. The scale also indicates to a supervisor what factors should be stressed if morale is to be maintained in a department.

The study indicates the convenience and flexibility of Thurstone's method in practical situations.

Manuscript received November 4, 1931

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Developing Resourcefulness

The Workers' Responsibility in the Unemployment Problem

By John H. Goss, *Scovill Manufacturing Company*

Mr. Goss, who is Vice-President of the Scovill Manufacturing Company, emphasizes a neglected means for employment stabilization. We are happy to be able to publish his address delivered at the Tenth Annual Conference of the Personnel Research Federation.

I AM going to try an experiment with you this morning. I shall ask you to imagine that you are several hundred of the employees of the industrial organization that I work for on their seventeenth annual summer outing. You are made up of junior executives, skilled artisans, and tradesmen—a group of better than average intelligence. You have had a grand time this morning, playing baseball, running races, pitching quoits, and participating in other competitive field sports. You have finished your luncheon and you have, more or less, "razzed" three preceding speakers. It is now my turn and I have been introduced by the toastmaster. I will now try to repeat, as nearly as I can remember, what I said to these men, who are more or less noisy when I get up, and probably impatient of hearing any more speech-making.

Fellow members of the Foremen's Association:

I am pleased to be at the seventeenth annual outing. Seventeen years is a long time. The sad thing is that so many of the old faces are missing: the encouraging thing is that there are so many new faces taking their places,—faces that indicate intelligent, energetic, virile men, with capacity to learn and think, and to apply their knowledge effectively and efficiently.

I am beginning to think that I am an old-timer,—thirty-seven years in the Company's service, most of it spent out in the shops with you or your predecessors. I feel that I know you, your aspirations, your jobs, what your actions and reactions will be under the varying conditions that arise in a factory like ours.

I presume that you are expecting something serious in the way of a talk from me, perhaps something about the depression, which is a most serious subject. Everybody is saying something about it. You would like my opinion of it, how long it will last, are we on our way out, etc. Optimists are out of favor. They are "the bunk." They have been wrong every step of

the way thus far. Pessimists are in the saddle. They are telling us what has been wrong, what is wrong, and what we must do about it. The politicians are getting ready to do something, to use you and your kind as fodder for their political ambitions. You read the papers and magazines and you know what they are saying and thinking. I don't know what you think about it, but I think this also is all *the bunk*. Most of it is an insult to your intelligence. Most of it takes for granted that you are *a joke*. But are they not justified in that conclusion? From the way you have handled yourselves and your personal affairs in the past can you blame them? As a matter of fact, haven't you and your kind been a joke? The most intelligent group of workers in our industries; that's what you are. Our hope of success rests in you. A high average intelligence, that has capacity to learn and store away knowledge. No question but that you do learn about and become highly expert in your job, the occupation from which you earn your livelihood. But what about other kinds of generally useful knowledge?

I must confess that to me there is your great shortcoming, and that is what lays you open to the conclusion on the part of many that something must be done to take care of you; that left to yourselves you are a joke, an economic risk, and perhaps a social burden. Can you fail to accept it as a challenge? Can you fail to resent the insult? Can you fail to wake up and do your damndest to show the world that you can take care of yourselves without the help of social legislation claimed to be in your behalf but really to protect society against your shortcomings?

The social order you live in is founded on individualism, and respects the rights of the individual. Would you change it? I don't think so. In fact, I know you would resist a change. You have but to study the Russian situation, a social order of the opposite type, and you will see that they are constantly making changes that are drawing them closer and closer to an acceptance of, or at least a practice like ours. In the end, if they succeed, it will be only because they accept and practice our methods and principles, which they now condemn and call capitalistic.

Your rights as individuals involve you in the reciprocal of having obligations, legal, ethical and moral. You may not exercise your rights to the extent of infringing the rights of others, and here both the law and ethics step in. This principle furnishes the great, underlying moral force of our civilization. Morally you should do everything in your power to so conduct your personal affairs that you will not become an economic liability, but rather an asset in your community. Your intelligence and your possession of generally useful knowledge to help you in the exercise of sound judgment is the greatest safeguard of yourselves and our whole social order. To the extent that you are lacking or fail, you will suffer and all will suffer.

Business is done on credit. The bases of credit are manifold in character. Largely they are built up on the

marshaling through various qualified agencies of your and my individual resources in the form of our savings, and to a great extent on our characters. The credit we get at the store for the most part is based on our characters. That used in large business enterprises for which we work is largely based on our savings. Our individual savings bulk when marshaled to much the greatest proportion of the total of all savings.

Character is greatly involved in the matter of our individual savings. Work and leisure are involved tremendously, and a fund of broadly useful knowledge on the part of us individuals is necessary if we as individuals are to carry out our obligations.

The fund of generally useful knowledge: How about it? How much of it do you possess outside of what rather intimately relates to your job? After a good many years with you, in intimacy, helping many of you over high spots in both good and bad times, I am forced to the conclusion that you are sadly lacking. Analyze yourselves and each of you draw your own conclusions. At any rate, if you have at your command the knowledge, too many of you are sadly lacking in the use of it. And I believe if you had it you would furnish more evidence of its use. I have handled several hundred cases among our employees who have gotten into financial difficulties. I see the faces of several here today. In most cases I have been able to help them out of trouble by revision of their living program and by getting them on a sound business basis in the conduct of their personal affairs. In doing so they have learned a lot and so have I. In most of these cases their intelligence would have kept them out of difficulty except for their ignorance and their gullibility to the plausible arguments of some high pressure salesman. These experiences have forced me to the conclusion that you, the more intelligent men, are lacking in your fund of generally useful knowledge, because it is always your class that asks for help, never the unskilled worker.

Why is this so? Probably industrial management and practice is largely to blame. Hours of work, specialization in men, tools, machinery, etc., have tended to make specialists of us all. This, by the way, is bound to return to the workers more leisure. When you get it what will you do with it? If you are lacking in general knowledge or the urge to acquire it, you will waste this leisure, and you will become, perhaps unwillingly, perhaps unwittingly, but as sure as God made little apples you will become the largest force making for the decadence of the civilization you live in. You will leave a heritage to your children and posterity that you will not want to think about, no matter where you may then be, and if you are where you ought to be you will be in "a hot place."

What do you do with your idle time now? You are all more or less on short time. Do you waste it? Time is money. An interval of time during which you apply your energy constructively, creatively, is valuable. I submit to you that you can make a great contribution toward the shortening of this depression by using a large part

of this idle time in putting values into your homes, whether you own them or not. Make them better places to live in, and in the doing of this learn some things you do not now know. Or offer your services to that same end to your relatives or your neighbors. Try it on. You will get a great kick out of it and you will find a new form of recreation that is not playing the fool or being a joke, and not least of all you will be training yourselves for the proper use of that larger amount of leisure if and when it comes to you. Put values into things by your own efforts in your leisure time.

Put your personal affairs on a business basis and make your family an economic unit and a business enterprise. Have a simple accounting system. Budget your expenses so that you can save money. Do you do this now? It is a rare bird among you that does. If you and your kind generally would, we could all feel that we had the real means of preventing *hard times*. This is the only way, in my judgment. It would at least spread the interval of their incidence, and soften their severity. It would lower the peaks and raise the valleys.

The unskilled laborer is generally a better business man than you. He has to be. He has to split the pennies and evaluate and make the fullest use of every possession he has. He raises his family as an economic unit and trains them accordingly. His method of living trains him to be resourceful in meeting emergencies and makes him physically hardy. He is canny and not an easy victim of the plausible arguments of the high pressure salesman. In numbers he bulks large in the total population and is a tremendous stabilizing asset.

So strongly do I feel about the importance of putting business methods into the conduct of personal affairs that I have put into our Comptroller's Department an order for service to you individually when you wish to use it. It is a service in the interest of your economic health, similar to that which you have at the plant hospital in the interest of your physical health. And there is no reason why you should not avail yourselves of it, just as you have for years used the service at the plant hospital. The same confidential relationship will be strictly observed. Try it on and see, both when you are actually in trouble and when you wish help and advice on a plan to keep you out of trouble and insure that you will not become an economic liability to the community, and that you may fulfill your obligations and do your part.

If you do put your personal affairs on a business basis be general manager of the enterprise, or if your wife would be a better one let her take the job. Take all members of your family into your confidence, as any of them can defeat your purpose if they don't understand it. There never was a better time to start than now.

I have cobbled a boot for you, and I suggest you try it on. If it hurts it will be because you have corns on your toes and not the fault of the boot. You must get rid of the corns; no "boot" will fit unless you do.

Now, fellows, honestly, haven't you been *the joke*? If so, wake up and get to your jobs. Save this situation, and let's not have another.

There, ladies and gentlemen, are my conclusions and my plan. We must come out of this depression with constructive plans that are soundly founded on and that put into play the inherent basic potentialities of our social order, and all the panaceas and nostrums founded on the fatalistic doctrine that the individual can't or won't care for himself won't do that. The proper functioning of the individual man and woman in the business of life is the greatest of all the potentialities we have. All agencies must develop, adopt and function under plans that will convince, stimulate, teach and help the individual to do his part, to fulfill his obligations. That is sound, constructive, preventive medicine against these economic epidemics that are so devastating to both guilty and innocent. At the moment curative and palliative measures are necessary, as we are in an epidemic. But now as we come out of it we seem to be placing too little emphasis on prevention. This is Economic Gospel but not materialistic doctrine. Man's spiritual aspirations cannot manifest themselves fully unless there be a sound, stable economic background or foundation. The more economic instability, the more restricted is the functioning of man's higher qualities.

What Is New in Employment Testing

By Millicent Pond, *Scovill Manufacturing Company*

In Volume V (1927) of the Personnel Journal, *Dr. Pond reported an outstanding program of scientific selection of toolmaking apprentices. In this article she describes a follow-up study of apprentices thus selected, and tells of other contributions made to a round table held in connection with the Tenth Annual Conference of the Personnel Research Federation.*

Three contributions to a round table on "What Is New in Employment Tests," held in connection with the Tenth Annual Conference of the Personnel Research Federation, are described. A report is given of recent developments at the Hawthorne Works of the Western Electric Company. The new Minnesota Vocational Test for Clerical Workers is described. A follow-up study of a selective testing program for toolmaking apprentices in the Scovill Manufacturing Company reveals that it has improved the quality of the group selected as much as was accomplished in a year of trial.

IN THE field of industrial and clerical employment tests the old cry was, "Tell us about some new tests." It has now changed to, "Tell us of any new experience with tests." The tests may be old or new, so long as the experience is valid. In order to discuss employment testing from this newer point of view, a round table was held in connection with the Tenth Annual Conference of the Personnel Research Federation. This article describes three of the major reports made to that group: recent experience at the Hawthorne Works of the Western Electric Company; development of the Minnesota Vocational Test for Clerical Workers; and a follow-up study of Scovill Manufacturing Company toolmaking apprentices selected with the aid of tests.

Western Electric Company[1]

During the past few years studies of dexterity tests have been extended to include practically all shop jobs for women at the Hawthorne Works of the Western Electric Company. Johnson O'Connor's finger dexterity test was used, together with a modification of a peg-board test employed by the Eastman Kodak Company. Statistical analysis was made of test results, and of items such as the individual's previous experience, age, education, etc. Standards based upon test scores and experience have been set up for use in selecting women for shop work.

[1] Report by A. H. Dyon, Hawthorne Works, Western Electric Company, Chicago, Ill.

There have also been some new developments in the case of shop men. Based upon the selective items referred to above, standards have been set up for drill press operators. In another study, preliminary standards have been obtained for adjusters. Of several tests and other selective items, the significant ones proved to be education, previous shop experience, and performance in a single paper folding test and a gauge sorting test.

In a study of both men and women on various types of soldering work, preliminary findings have been obtained from a study of various items including the finger dexterity tests mentioned above and a special soldering test. To compensate for the restricted distribution under present conditions, in establishing a job criterion we found it desirable to assign the tested individuals to the places they would have had in a normal distribution of solderers.

In order to simplify interpretation of test results, a uniform letter grade method for recording composite scores has been set up, including test performance and any other selective items such as experience or education. The letter grades "A" to "D" are used to indicate the individual's probability of success in a given line of work. Whatever the raw scores in a given case may be, an "A" grade would always mean the greatest probability of success, "B" the next, "C" the next, and "D" the least. This method is planned to eliminate the confusion usually associated with use of various combinations of point scores for a variety of selective items.

Another new development is a study of engineers. In a preliminary study of about a hundred men, significant trends were noted in the use of a "Practical Problems" test, developed at Hawthorne. Because of the importance of personality factors as well as factors of intellectual capacity and specific training, a further study of engineers will be made, employing several items designed to measure the so-called personality traits. These include, among others, the Bernreuter Inventory and the Strong Vocational Interest blank. The Otis intelligence test and the Zyve Scientific Aptitude test are also included in this experiment.

In response to the need for a better understanding of maladjusted or so-called "problem case" employees, we have, during the past two years, set up a definite procedure for interviewing and testing them. This work, started in a small way several years ago, is of interest as indicating growing recognition of the value of the clinical viewpoint; the need for considering the total situation, including test results, job attitude, personal history, etc., in order to effect better adjustments in these special cases.

MINNESOTA VOCATIONAL TEST FOR CLERICAL WORKERS[2]

The present report is based upon the Master's thesis of Dorothy M. Andrew, Department of Psychology, University of Minnesota, 1931.[3]

Miss Andrew's task was to prepare an improved test for file clerks. The

[2] Report by DONALD G. PATERSON, University of Minnesota.

[3] On file at the University of Minnesota Library.

work grew out of limitations in the Scott Company File Clerk's Test which involves to too great an extent the element of academic intelligence. It also represents an improvement over the Johnson O'Connor Work-Samples for File Clerks, which appear to be too brief and not sufficiently reliable for purposes of individual diagnosis.

Miss Andrew's test is based on the theory of unique traits.[4] It was hoped that a test involving name checking and number checking could be developed, which would correlate only slightly with academic intelligence tests and yet which would correlate to a marked extent with demonstrated ability in clerical work. It was hoped that the test would prove to be relatively free from specific practice and clerical experience as such, thus fulfilling the requirements of an aptitude test.

A preliminary experiment involving name comparison and number comparisons showed that sub-tests of 70 items each would yield a reliability coefficient of +.70, which is too low for individual diagnosis work; and that such tests would have to be greatly increased in length. This preliminary experiment also demonstrated a perfect correlation between name checking and number checking when the intercorrelation between the two types of performance is corrected for attenuation.

On the basis of the preliminary experiment, Miss Andrew constructed a new test made up of two sub-tests of 200 items each, involving name comparisons; and two sub-tests of 200 items each, involving number comparisons. The total test thus includes 800 items. A systematic plan of organizing the items within each sub-test was followed. The time limit method of administration was used, since Tinker and Paterson had shown that for speed tests time limit and work limit yield equivalent and interchangeable results.[5] Validity was obtained by comparing personal history ratings, made prior to scoring the tests, with scores of 138 clerical employees, and by comparing supervisor's ratings and test scores. The personal history ratings were based upon previous experience, education, age of leaving highest school grade, and business training. Validity coefficients in the neighborhood of +.65 were obtained. Supervisor's ratings yielded a correlation of +.37 with test scores. In each case separate correlations were obtained for ability in filing work and also for ability in general clerical work, and correlations of the same magnitude resulted. The conclusion was reached that the test is as effective for measuring aptitude for general clerical work as for measuring aptitude for filing work.

The test-retest reliability was found to be +.86, indicating that the test is sufficiently reliable for individual diagnosis work.

[4] See discussion of unique traits in *Minnesota Mechanical Ability Tests*, D. G. Paterson, R. M. Elliott, L. D. Anderson, H. A. Toops, and E. F. Heidbreder, University of Minnesota Press, 1930.

[5] D. G. Paterson and M. A. Tinker, Time Limit vs. Work Limit Methods. *American Journal of Psychology*, January 1930, pp. 101–104.

The correlation between name checking and number checking, corrected for attenuation, is +.92.

The correlation between the Scott Company File Clerks Test and the Minnesota Test is +.71.

The correlation between intelligence test scores and the Minnesota Clerical Checking Test is about +.25, and the correlation between school grade completed and the Minnesota Clerical Checking Test is +.20. These correlations indicate that the present test is measuring a unique trait in which academic intelligence is conspicuous by virtue of its absence.

Negative correlations were obtained between scores on the Minnesota Clerical Checking Test and age, years of filing experience, and amount of training. These negative correlations suggest that the test is an aptitude test and not a proficiency test.

SCOVILL MANUFACTURING COMPANY[6]

In 1927 we reported[7] a study of the relation between test scores and foreman's ratings in a group of 106 toolmaking apprentices, which predicted that if a certain minimum score were adopted in hiring for the occupation, the percentage of satisfactory apprentices would be raised from 60 to 82. The tests were four of the Army Beta series, errors in one of them, and a special circle marking test. Schooling was given no weighting in the score, but age was. Two questions arise: Was the quality prediction fulfilled in actual practice? What was the effect on turnover?

The criterion of success is a yearly rating by the foreman, based upon instructors' reports, records of performance, etc. In normal times, apprentices are hired at the rate of two per month, with additional hirings whenever there is an extra opening. The yearly rating is therefore a cross-section, some of the apprentices having been in the course only two months, others longer. Tables 1 and 2 give a full report of the firm's experience with this occupation from January 1, 1920, to September 1, 1930.

The Roman numerals on the left of each table represent the groups of apprentices studied. Groups I to III inclusive were not selected by test, groups IV to VII were so selected. Group I comprises 57 boys hired prior to any testing, but for whom it was possible to secure ratings at the beginning of the test investigation. The hiring period for group I was nearly four years.

All succeeding groups represent hirings of one year only. Groups II-a, II-b, and III cover the 106 boys studied to obtain the proper minimum score for the occupation; 37 per cent of them score below the minimum. Groups IV-VII are the boys who were selected from September 1, 1926, to September 1, 1930, from among applicants who scored in the preferred range. Only 8 per cent of them were below the passing mark, and these were close to the critical score. Out of an

[6] Report by MILLICENT POND, Scovill Manufacturing Company, Waterbury, Conn.

[7] Millicent Pond, Selective Placement of Metal Workers. III. Selection of Toolmaking Apprentices. *Journal of Personnel Research*, 1927, vol. 5, pp. 452–466.

ample supply of preferred applicants, the final selection of these apprentices was made upon the basis of all the factors which go to make up an interviewer's judgment.

Let us consider first the question of quality, table 1.

Column 1 shows the total number of apprentices hired in each group, columns 2 and 3 the number rated satisfactory or unsatisfactory in the first foreman's rating, column 4 the percentage satisfactory. We note at once that the prediction of quality has been fulfilled. Groups I to III average 61 per cent satisfactory; groups IV to VII, 83 per cent; the difference, 22 per cent, is more than one-third of 61 per cent, and large enough to be reliable according to the statistical requirement that the difference should be at least three times the standard error of the difference. Practically expressed, this percentage can be counted on to occur again in the long run. Note, however, the fluctuations in the single year groups!

Now, consider column 5, the number of satisfactory apprentices still in the course at time of the rating. Differences between this column and column 2, of course, represent satisfactory apprentices who terminated voluntarily (or were transferred) before the date of rating. From group III on, this column 5 figure is very stationary, i.e., 25, 24, 24, 23, 28. Either by chance or by design, one of our factors has been kept nearly constant, namely the flow of satisfactory first year apprentices. In comparison, the corresponding figures of column 1 have decreased, i.e., 56, 40, 44, 35, 36. To maintain an even flow of satisfactory

TABLE 1

Toolmaking apprentices, quality

		1	2	3	4	5	6	7
	GROUP	NO. H.	NO. S.	NO. U.	PER CENT S.	NO. S. REM.	NO. S. U. REM.	PER CENT OF REM. SAT.
Not selected by test	I	57	36	21	63	32	37	86
	II-a	15	7	8	47	7	11	64
	II-b	35	21	14	60	17	19	89
	III	56	35	22	63	25	32	78
	Total	163	99	64	61	81	99	82
Selected by test	IV	40	36	4	90	24	25	96
	V	44	33	11	75	24	24	100
	VI	35	32	3	91	23	24	96
	VII	36	28	8	78	28	29	97
	Total	155	129	26	83	99	102	97
Difference					+22			+15
D/e					4.4			3.4

first year apprentices into the later years of the course we have had to hire fewer and fewer new boys, an extremely practical point from which to view our results.

Column 5 is logically followed by total number of new apprentices still

cent satisfactory as hired, improved by a process of sifting over a period of one year, average 82 per cent satisfactory at the date of the first rating. Groups IV-VII, 83 per cent satisfactory to begin with, average 97 per cent satisfactory later. In other words, a test

TABLE 2

Toolmaking apprentices, turnover

		1	2	3	4	5	6	7	8	9
	GROUP	NO. H.	NO. TERM.	PER CENT TERM.	NO. U. TERM.	PER CENT OF TOT.	PER CENT OF TOT. U.	NO. S. TERM.	PER CENT OF TOT.	PER CENT OF TOT. S.
Not selected by test...	I	57	20	35	16	28	76	4	7	11
	II-a	15	4	27	4	27	50	0	0	0
	II-b	35	16	46	12	34	86	4	11	19
	III	56	24	43	14	25	63	10	18	29
	Total	163	64(74)	39(45)	46(56)	28(34)	72(88)	18	11	18
Selected by test.....	IV	40	15	38	3	7	75	12	30	33
	V	44	20	45	11	25	100	9	20	27
	VI	35	11	31	2	6	67	9	26	28
	VII	36	7	19	7	19	88	0	0	0
	Total	155	53	34	23	15	88	30	19	23
Difference.....				−5(−11)		−13(−19)	+16		+8	+5
D/ε.....				1.1(2.1)		2.9(4.0)	1.6		2.0	0.8

H—Hired.
S—Satisfactory, first year of course.
U—Unsatisfactory, first year of course.
Rem.—Still in course, date of first rating.
Term.—Terminated or transferred out prior to first rating.
D—Difference.
ε—Standard error of the difference.

in course at the time of the first rating, column 6; and percentage of these who are satisfactory, column 7. Column 7 shows the quality of the group as it exists at the rating date. And now we have a most interesting comparison to make between the four totals in columns 4 and 7. Groups I-III, 61 per

requiring half an hour per person (less than one-half week, total testing time, for a year's hiring of boys) is substituted for the weeding otherwise accomplished in a whole year, and produces the same result. Moreover, the sum total of emotional stress involved is tremendously less.

Now let us consider turnover, and table 2. For our purpose this must be expressed as percentage of boys hired who are terminated or transferred from the course by the date of the first rating. It might more properly be called termination percentage. Column 1, numbers hired, and column 2, numbers terminated, give column 3, percentage; and we see that the percentage of termination prior to the first rating has been reduced only slightly by test selection. The difference is not reliable.

Why is this the case? The answer is that three different effects of test selection are combined in these figures, and tend to cancel one another, as we shall see from the remaining figures in the table. From column 5, percentages of the total hirings terminated as unsatisfactory, we make the statement that percentage of termination due to failure has decreased, but not as much as we would expect, and not quite reliably. On the other hand, from column 6, unsatisfactory terminates expressed in percentages of number of unsatisfactory apprentices hired, we see that there is an increase. In practical terms, a tendency appears to have come not to retain unsatisfactory apprentices as long as formerly, a more definite policy on the part of the foreman to terminate unprofitable connections. If 88 per cent of unsatisfactory apprentices had formerly been terminated before the first rating, figures shown in parenthesis would have obtained; the difference in column 5 would be greater than it is (−19), and reliable ($D/\epsilon = 4.0$).

Finally, columns 7, 8, 9 give numbers of satisfactory apprentices terminated or transferred, percentages of total hirings, and percentages of total satisfactory hirings, respectively. Column 9 is the significant one, and is worth some attention in detail. The difference (5) is small, and unreliable. The zero terminations reflect business conditions, since the first one is for 1923–24, and the last one for 1929–30 (September to September). Both zero terminations and high ones occur in each half column, i.e., in the unselected groups and the test selected groups alike. It is correct to say that the percentage of voluntary terminations of satisfactory apprentices is not affected by the test selection.

Concluding briefly, then, adoption of the minimum score for toolmaking apprentices has improved the quality of the group selected as much as was formerly accomplished in a year of trial in the course. It has reduced the number of hirings necessary to maintain an even flow of satisfactory first year apprentices. Although it has not affected voluntary turnover of satisfactory apprentices, and cannot be expected to do so, it has reduced turnover due to failure, and to some extent length of time required to determine failure.

Manuscript received December 12, 1931

Student Employment at a State University

By Henry Beaumont, *University of Kentucky*

Student employment is apparently so widespread as to demand special administrative attention. Dr. Beaumont reveals that 42 per cent of men students at the University of Kentucky have outside employment during the school year, while 73 per cent work during the summer months.

Of 2439 men and women students who answered a questionnaire, 55 per cent worked during the summer vacation and 35 per cent had outside employment during the school term, working an average of 22.7 hours per week.

A majority spent less than $400 per semester, but members of fraternities spent approximately $100 more per semester than nonmembers.

TO SURVEY the outside employment, earnings and expenses of students at the University of Kentucky, all those who returned for the second semester of the year 1930–1 were asked to fill out a questionnaire as a part of the registration procedure. The inquiry was directed solely to the situation for the previous semester and the preceding summer so as to be definite. Students were asked not to sign their names to the blanks in order to encourage frankness. Questionnaires were returned by 2439 students, 1678 men and 761 women.

The returns were divided into three groups, according to whether none, all, or part of college expenses had been earned during the first semester of the year 1930–31. The distribution is shown in table 1.

The number of students earning part or all of their college expenses showed a remarkable tendency to remain constant during the four years of college with the exception of a 10 per cent increase in the number of seniors who earned all of their expenses.

Our figures thus far indicate only what percentage of students paid or contributed to their expenses during the semester in question with money earned by themselves *at any time.* Table 2 gives the percentages of those who worked during that semester, during the preceding summer, or both.

From a comparison of the two tables it may be seen that 34 per cent of the men indicated that they paid no part of their own college expenses, yet only 19 per cent of them were not employed. Evidently 15 per cent made their own expenses during the summer months.

It is interesting to note that 75 per cent of the women indicate that no part of their college expenses was earned by themselves and that this same percentage was not employed.

TABLE 1

Percentages of students earning none, part, or all of their expenses

	NO EXPENSES EARNED	ALL EXPENSES EARNED	PART EXPENSES EARNED
Men	34	22	44
Women	75	6	19
All students	47	17	36

TABLE 2

Percentages of students employed during the first semester 1930–1, the previous summer, or both

	FIRST SEMESTER	PREVIOUS SUMMER	BOTH	NEITHER
Men	42	73	34	19
Women	19	15	9	75
All students	35	55	27	37

TABLE 3

Contributions of students to their college expenses

AMOUNT	MEN	WOMEN	ALL STUDENTS
	per cent	*per cent*	*per cent*
Less than $99	23.5	52	27.5
100–149	17.5	14	17.5
150–199	14.5	8	14
200–249	15.5	12	15
250–299	11	2.5	10
300–349	7.5	3	7
350–399	3	3	2.5
400–449	3.5	3	3
450–499	1	0	1
Over $500	3	2.5	2.5

The question as to the amount contributed by the students to their college expenses during the semester was answered by 935 men and 126 women. Table 3 gives the amounts they reported.

The time spent by students on outside work during the semester, the number of those regularly or irregularly employed and their earnings are shown in table 4.

The variation in the amounts reported earned by those irregularly employed is too large to give much significance to these figures. This group includes those who worked for a few weeks or even months, as well as those who worked only for a few hours.

TABLE 4

Student employment for the first semester 1930–1

	MEN	WOMEN	ALL STUDENTS
Regularly employed:			
Number	628	115	743
Average working hours per week	23.3	19.1	22.7
Earning less than 30¢ per hour, per cent	43	36	41
Earning more than 40¢ per hour, per cent	37	25	35
Irregularly employed:			
Number	113	31	144
Average earnings for the semester	$43.83	$27.15	$40.05

It is significant to note that the average amount of time spent on gainful outside occupations by students of the University of Kentucky who were regularly employed during the first semester of the year 1930–1 was 22.7 hours per week. If this average seems rather high it should be remembered that almost 20 per cent of the men

worked for their meals during hours which are not devoted to study even by those who are not employed.

It is to be expected that members of fraternities spend more money while in college than non-members. Our data verify this for those cases where information was given. However, only 1424 out of the group of 2439 answered this particular question on the blank, so that the figures given in table 5 are probably underestimates.

TABLE 5

Amounts reported as spent during the first semester 1930–1

AMOUNT	MEN		WOMEN	
	Fraternity (474)	Non-fraternity (640)	Sorority (130)	Non-sorority (180)
	per cent	*per cent*	*per cent*	*per cent*
Less than $200	8	19	12	21
200–299	23	34	24	45
300–399	26	28	28	17.5
400–499	23	11	14	7.5
500–599	10.5	4	13	4
600–699	3.5	2	3	3
Over $700	6	2	6	2

It is readily seen from table 5 that the expenses of fraternity men and women who answered this question were higher than those of the non-fraternity groups. The mode of the fraternity men was in the range from $300–399 and of the non-fraternity men from $200–299. The same is true of the women in these two groups.

Of the non-fraternity men, 53 per cent spent less than $300, while only 31 per cent of the fraternity men spent less than that amount. This is true of 36 per cent of the women in the sorority group and of 66 per cent of the non-sorority women. Only 8 per cent of the non-fraternity men spent over $500 as compared with 20 per cent of the fraternity men. For the women these figures are 9 per cent and 22 per cent respectively.

It seems reasonable to conclude that the problem of summer and part-time employment in an institution where 73 per cent of the men work during the summer and 42 per cent during the school term is one which should be officially recognized and met. Its solution at the University of Kentucky is now left to the Deans of Men and Women, the Athletic Council, and the Christian Associations. Coördination of the various agencies concerned in meeting this problem is necessary.

The employment problem in our universities and colleges has become of sufficient importance to warrant an investigation of existing conditions by each institution. The method employed in this study is offered as a suggestion.

Manuscript received July 20, 1931

Reliability of a Self-rating Scale

By W. E. Slaght, *Cornell College, Iowa*

The late Dr. Slaght presented this paper to the Thirty-Ninth Annual Meeting of the American Psychological Association, held in Toronto.

A self-rating scale consisting of 70 items was administered to forty subjects, and then readministered after an interval of about two years. The average score on each item was calculated and results on first and later administrations were compared in terms of differences between averages. For most items these differences were negligible. There was a considerable shift in the case of nine items.

THIS paper presents the results from a study of the reliability of a self-rating scale. It consisted of seventy items dealing with the presence or absence of such qualities as loyalty to old friends, persistence in an undertaking, absent-mindedness, patience, and radicalism in religion.

In constructing the test a form was used similar to one constructed by the Institute for Character Research at the University of Iowa. Two opposing characteristics of the quality being studied were arranged at opposite ends of a scale. For example the first item was:

Very dark hair..... : .....Very light hair

Between these two statements was a scale consisting of a colon in the center and five dots on either side. The directions were as follows: "Below are pairs of opposite qualities or traits. The dotted line between each pair is a scale on which you are asked to rate yourself. If you think you have about equal amount of both qualities, check on the colon. If more of one than the other, check to the right or left of the colon as far as best represents your case." Thus each individual rates himself on a common scale for each item of the test. It must be conceded that this scale, like all others of its type, presents a subjective form of judgment. It has the advantage of being easily marked and lends itself to statistical treatment. In each rating there are eleven possible steps: beginning at the left, each period is given the arbitrary value of ten, so there are successive values running from zero through 10, 20, 30, etc., to 100. In this way the marking of each person can be transmitted into percentage values.

The test was first given to a group of forty students in Cornell College at the end of the first semester of their senior year. This paper is not concerned with purpose and use of this original test. It was decided however to administer it again to the original group of students after an interval of time had elapsed. Thus a check was provided on judgments made in the

first testing. The interval varies somewhat with different individuals but averaged almost one and a half years after graduation, so that about two years elapsed between tests.

In the following pages an attempt is made to correlate results of these two tests and learn what changes are produced by introduction of a considerable interval of time between the two administrations. Only a few investigations of this type have been made. McGoech and Whitley[1] investigated reliabilities of the Pressey X-O test given to a group of students after intervals of forty-eight hours, forty-five days, and ninety days respectively. K. M. Cowdery[2] also reports on the significance of scores on repetitions of the Thorndike intelligence examination.

In evaluating the test as it was first given, all ratings of the forty subjects were thrown together for each item, and the mean was ascertained. The same was done for the items of the second testing. This provided a basis for comparison of each item between first and second administrations of the test. The statistical method used was that outlined by Otis.[3] Reliability of the difference between two obtained means is measured in terms of probable error. The standard deviation was found for the means of each item in the earlier and later test. Next, reliability of the difference was ascertained in terms of probable error of the difference between the two means. Then, a ratio was found by dividing difference between the means by their probable error. This ratio will indicate the probability that the difference is due to chance. A ratio of 1.0 indicates that the small difference is untrustworthy and undoubtedly due to chance. Where the ratio is 3.0, i.e., when the observed difference is three times its probable error, the differences might occur by chance once in twenty-four times. When the ratio is 3.5, the chance factors are 1/54. Where the ratio is 4.0, the chance factors are 1/142, etc. All test items were studied in the light of this relationship.

It is impossible to give all seventy questions composing this section of the test; but they were classified under several heads, as follows: physical, such as color of hair, 4 items; emotional, such as cheerful or sad, 16 items; intellectual, such as enjoyment of mental work, 8 items; motor, such as slow and deliberate movements, 6 items; sex interest, such as admiration by the opposite sex, 4 items; social, such as desire to become popular, 9 items; moral qualities, such as conduct at variance with ideals, 8 items; religious, such as importance of religion in daily life, 9 items; miscellaneous, 6 items.

A survey of results reveals that in most of the items there is a substantial agreement between earlier and later judgments. The ratio between the two is very small, suggesting that after an interval of two years the subjects made substantially the same estimates of themselves that they did on the earlier occasion. When a pupil makes

[1] McGoech, J. A., and Whitley, Paul L.: "The reliability of the Pressey X-O tests," etc. *Pedagogical Seminary*, Vol. 34, 1927.

[2] Cowdery, K. M.: Repeated Thorndike Intelligence Examination. *School and Society*, vol. 27, 1928, pp. 367–369.

[3] Otis, A. S.: *Statistical Method in Educational Measurement*. Pp. 258–62.

scores very nearly the same in two equivalent alternative forms of the same test, it is said to be reliable. In this study there are two responses, to the same test, with a time interval. But, as in alternative forms of one test, similarity of response indicates reliability. The majority of items in this test, comparing the two administrations, show a ratio of 1.0 or less. This indicates that some constant factor must be influencing their judgment. In such questions as color of hair and eyes, a close correspondence would be expected, and for these items the ratio is practically zero. However, the same close correspondence exists when many other items are taken, such as (1) perseverance in an undertaking, (2) work without system, (3) deliberateness in action, etc., and the ratio of these items is less than 1.0. The responses of the subjects thus represent accurate personal knowledge, an estimate that has remained substantially correct over a period of two years. The small ratio shown on the great majority of items is an indication of the reliability of this type of self-rating scale. On the basis of the classification given above, the agreement between the two testings was as follows: Physical, 3 items; emotional, 15 items; intellectual, 6 items; motor, 6 items; social, 7 items; sex, 3 items; morale, 8 items; religious, 7 items.

In contrast to this identity between a large number of the questions, there was a small number where a decided difference was revealed between the two responses. In all there were only nine items that showed a ratio of over 2.0. They are as follows:

Item		*Ratio*
Always healthful	: Extremely delicate	2.70
Warm and friendly	: *Cold* and passionless	4.11
Constantly forgetful	: *Good* at remembering errands and details	2.78
Much admired by the opposite sex	: *Ignored* by the opposite sex	3.53
Dislike to study your own mind	: *Excessively* introspective	3.68
Radical in religion	: *Conservative* in religion	2.15
Desire to become popular	: Desire to remain inconspicuous	5.05
Too fond of being praised	: Reasonably unremoved by praise	2.32
No faith in prayer	: Implicit faith in prayer	2.32

The word underlined in each case shows the direction in which the judgment has moved.

There are two possible explanations: either that the variations are due to chance factors, or that they represent a distinct change of personality. Concentration in a few items of such a large degree of variation would tend to rule out the element of chance and to indicate that the items might by their nature be involved in real character changes. A study of the judgments will show two possible sources to which they might be attributed. First, a maturation factor: emergence from adolescence into maturity. The period represented by the interval between tests covers the time from 22 to 25 years of age. The report of better health might indicate presence of more stable emotional and physical conditions. The passing of adolescence might well be represented by becoming less friendly and by a more

conservative attitude toward religion. A tendency to lose interest in the opposite sex might also belong here.

A second factor is the influence of the environmental change that has come in transition from college life to the world of business. All who responded to the test the second time had left college and were in some form of business activity, and this for an average period of two years. Improvement in remembering details and paying more attention to the activities of one's own mind are indications of this transition. The desire to become popular and to be admired is also likely to be related to the desire for business success. The failure that so often comes in these early years of industrial struggle might account for lessened faith in the efficacy of prayer. Another interesting feature disclosed from the foregoing nine items is the difference in the responses of the two sexes. One fourth of the subjects were women. The responses of men and women for each of these nine items were separated, and the ratio was calculated for each sex. On four topics the changes in statement are due largely to reactions of the men, viz., radicalism in religion, studying of one's own mind, warmth and friendliness, lack of faith in prayer. In the other five, no differences were discoverable between men and women.

While the conclusions regarding these nine items are of course speculative, the main results of the analysis seem clear. In a self-rating scale consisting of seventy items, responses given at intervals of two years show such similarity as to suggest that variations are due to chance, except in the case of the nine mentioned; and only four of these show changes in judgment which can certainly be attributed to other factors. These may represent modifications that have taken place in personality in the two-year period.

Manuscript received September 3, 1931

Safety Inspection Report Form

By E. N. Goldstine, *San Francisco*

Regular and systematic inspection is an important part of any safety program. Mr. Goldstine describes an inspection report form which has proved its usefulness.

The continued prevalence of high accident frequency rates in many industries and industrial plants, while others with comparable conditions are making remarkable progress, indicates that superficial methods and interest do not produce sufficiently satisfactory results. Successful promotion of safety requires regular and frequent inspection of a high standard, immediately followed by the necessary steps to eliminate or reduce dangerous hazards wherever possible. The safety inspection report form described has been made the keystone of a comprehensive plan for effective accident prevention.

EVERY accident is a natural consequence of one or more objectionable conditions. The basic causes of accidents are generally associated with certain physical factors affecting material or psychological circumstances, either separately, or in diverse combinations. The material may be in various forms, at rest, or in motion. Psychological and physiological circumstances will control the working methods and behavior of the involved persons.

Inadequate guards, poor housekeeping, defective tools, unsound material, excessive loading of temporary structures, improper piling of stock, and similar conditions are recognized as physical antecedents of mishaps. Ignorance, predisposition, inattention, preoccupation, and depression are acknowledged as mental states conducive to adversity. Careful and frequent inspection by properly trained, competent observers can usually detect the presence of dangerous physical and mental factors before trouble occurs.

A printed form has been designed to stimulate and guide interest in and attention to the conditions bearing relation to accidents. The form illustrated is in actual use on construction work. One with minor changes has been prepared for manufacturing plants.

Fourteen classification headings related to various factors affecting safety are listed on the report form. At the left of each classification may be entered its percentage rating, while on the extreme right this identical rating can be charted graphically. The particular condition responsible for the reduction in rating is described so that it can be located and corrected. A manual has been prepared to make recognition of hazards a simple matter

SAFETY INSPECTION REPORT

Report Noted by
Date

Prepared by *Sample Report* Checked by Date

Rating %		*Classification*	*Conditions observed*	*Graphic Rating*	*Deductions %*
–	1	Excavation, Shoring, Underpinning			
60	2	Towers—*not enclosed*, Hoists, Guy Wires, Landing Platforms—*Guard Rails missing*			*40*
20	3	Scaffolds—*Plank on excessive spans*, Runways, Ladders —*to roof defective*, Stairs—*Clean up landings*, Wall and Floor Openings			*80*
80	4	Concrete Forms and Shores—*Provide more bracing*, Construction Methods			*20*
80	5	Material, Storage and Handling—*Tile carelessly piled*			*20*
60	6	Equipment, Machinery, Hand Tools—*need dressing*, Ropes—*Hang up ropes*, Cables, Blocks, etc.			*40*
40	7	Housekeeping—*Put tools in order*, Fire Hazards—*Remove waste paper*, Electrical Hazards—*Repair extension cords*			*60*
60	8	Nail Hazards—*Excessive on 1st and 2nd floors*			*40*
80	9	Public Hazard—*Fix sidewalk and rail*			*20*
0	10	Safety Poster Display—*None*			*320*
60	11	First Aid Supplies Safety Goggles, etc.	*Incomplete*		
50	12	Observance of Safety Instructions Attitude Towards Safety			
60	13	Promptness in Submitting Accident and Safety Reports			
–	14	Miscellaneous			

0% 100%

Date Hazards noted will be corrected, *3 days*. Accident Report Blanks on Hand, *No.* Medical Attention Blanks, *Yes.* Safety Goggles, *No.* Safety Posters, *No.* Required First Aid Supplies, *No.* Notice of Return to Work Reported, *Yes.* Do all employees get first aid promptly to prevent infection? *No.* Do you believe everything necessary for safe working conditions is being done? *No.*

Total Report Rating	Self Inspection	Check Inspection
Safety Poster Display	*0–10*	*0*
Supplies & Equipment	*0–20 × 60%*	*12*
Prompt Reports	*0–10 × 60*	*6*
Complete Reports	*0–10 × 60*	*6*
Conditions & Accidents	*0–50 – (320% ÷ 20%) – 8 = 50 – 16 – 8*	*26*
Extra Credits	*0–10*	*0*
Total	%	*50%*

Approximately 3200 man hours of employment during past week.

Suggestions concerning Safety: *Correct conditions noted.*

Obtain and display Safety Posters.

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for untrained inspectors. It consists of fifteen typewritten pages, with paragraphs numbered, classified, and indexed under titles that make for ready reference.

The percentage rating in each classification is arrived at by a set of clear rules which characterize the relative importance of the hazards. Each instance of needless exposure calls for a deduction ranging between 10 and 30 per cent from the perfect score of 100 per cent in the classification to which it belongs. The graphic chart on the right side of the sheet presents a visual record readable at a glance. It serves to indicate immediately and to magnify readily any serious situation demanding attention.

Following listing of the factors affecting safety is a series of questions with yes and no cross-out answers. These indicate deficiency of accident report blanks, first aid supplies, safety posters, etc. There is also provided an opportunity to record when the unsatisfactory conditions noted will be corrected.

Under a Total Report Rating at the bottom of the page, the above mentioned fourteen classifications are grouped into six numerical ratings for the total situation. The simple rules for the rating procedure are completely described in a set of instructions. The elements can be learned in a few minutes. Reference to these rules is only required when the occurrence of an accident calls for special deductions.

With theoretically perfect conditions, the sum of the first five numerical ratings under the Total Report Rating would be 100 per cent. Such an ideal state is seldom attainable, except with small groups of employees, standardized working conditions, or unusually competent supervision. The sixth numerical rating is for credits, which may amount to 10 per cent, extended for excellent cooperation in preparing the various accident and rating report forms, and following safety instructions.

A few illustrations to explain the system of deductions will be mentioned. The use of grossly inappropriate safety posters, or their poor presentation can affect the Safety Poster Display mark by a discount of as much as five points. The absence of various essential first aid supplies, safety goggles, or other required protective devices causes deductions on a predetermined basis. Delays or types of negligence in submitting safety and accident reports, return to work notices, etc., calls for demerits. Points are subtracted for hazardous conditions and working methods, from one half to three points for each instance. The deductions for lost time accidents range from three to eight points, varying in accordance with the basic causes of the accident, all causes being listed and carefully defined. Special effort and care used in preparing the forms, submitting them as instructed, making acceptable suggestions concerning safety, correcting conditions noted on previous inspection reports and other desirable factors may result in the award of credits of as much as ten points, which will offset some of the deductions. Space is left for a separate Total Report Rating to be made by the Safety Engineer, or the Insurance Inspector, for making any desired corrections from the figures as originally set down.

Regular and frequent use of safety inspection report forms is expected to stimulate interest in constant inspection for the elimination of needless hazards. A standard of performance that can be easily understood is set up as a measure of achievement. The completed record will indicate to the trained observer familiar with existing conditions the extent of safety knowledge and sincere interest possessed by those who make it out. It will also serve to show any particular need for more specific instructions and methods affecting safety, as pointed out by the listing of hazards and occurrence of accidents.

The preparation of the report might appear too involved for those who are to use it. This has not proved to be the case. Following some supplementary instruction, men capable of making out daily cost reports on construction operations have encountered no major difficulties. Beginning with the preparation of the first report, immediate steps were taken in practically every instance to correct conditions that would have been ignored prior to its use. Timekeepers and Superintendents, in the majority of cases, have become intensely interested in its possibilities and have cooperated as fully as could be expected.

The Safety Inspection Report Form is an essential part of an integrated comprehensive technique for accident prevention through the cooperation of all employees. Its development is based on the principle that eternal vigilance is the price of safety. The entire safety program of a construction company is coordinated with it. The general effectiveness is being tested carefully. It is expected that a definite valuation of its usefulness will be made within the next six months.

Manuscript received September 6, 1931

Analysis of Skilled Movements[1]

By L. D. Hartson, *Oberlin College*

Analysis of the literature dealing with movements reveals a wide gulf between the approach of physiologists, on the one hand, and that of industrial engineers, applied psychologists, and physical educators, on the other. The interest of physiologists has been in the nerve-muscle preparation. Attention of the others has been focused upon the results: output, distance covered in a given time, elimination of excess activity, or aesthetic value of the movement. Dr. Hartson presents a third viewpoint. He calls attention to the importance of distinguishing the different types of movement which function simultaneously in any coördinate action.

This article calls attention to the importance of distinguishing the different types of movement which function simultaneously in any coördinate action. There are two fundamental movement forms: (1) that in which two groups of opposing muscles are contracted, one against the other; (2) that in which there is no opposing contraction of muscle groups. Advantages of the latter type, usually called balistic, are cited. It is emphasized, however, that coördinate action is always a combination of different types of movement. Following a classification of work types, the literature of industrial engineering and applied psychology is systematically reviewed and analyzed. A list of references is appended.

FOR most people a movement is a movement. Even for most of those who have written about them, skilled and unskilled movements are differentiated only in terms of their results. Pear classifies them as "perfectly" and "imperfectly" adapted (36). Gilbreth labels them according to the function performed (24). In general, interest has centered in practical results rather than in analysis of the process of the movement itself.

The foundations for an analysis of skilled movements can be traced at least as far as 1885, when Beaunis recognized three classes of intermuscular relation during contraction (2). P. Richer used this classification as a point of departure for his work, as indicated by the paper which he

[1] This paper was inspired by the work of R. H. Stetson, since 1909 Director of the Psychological Laboratory of Oberlin College, who for thirty years has carried on research in the field of movements. To him should be credited whatever original viewpoint may be expressed in the paper. The material was presented, in part, before Section I, A. A. A. S., in Cleveland, December 31, 1930.

published under the title, "Locomotion Humaine," in 1901 (39). After making photographic studies, Richer described the essential difference between slow movement and fast, or what he called the balistic movement. Richer's classification was used by Stetson in the experimental work on rhythm, which was reported in 1905 (47). Work in the Oberlin laboratory resulted in a reformulation which appeared in *Psychological Monographs* in 1923 (49, p. 18).

THE FUNDAMENTAL MOVEMENT FORMS

The experimental work leads to a distinction between two main types of movement, the elementary unit of which is the tremor.

1. The first general type of movement is that in which two groups of opposing muscles are contracted, one against the other. Such movements are of two sorts:

a. The fixation: the member is held still by the contraction of opposing muscles which produce approximate rigidity.

b. The moving fixation: when there is inequality in the force exerted by the opposing muscle groups, position of the member changes.

2. The second general type is that in which there is no opposing contraction of muscle groups. When one group contracts, its antagonists are relaxed. It is this form of movement which Richer called balistic.

a. The fixation, or movement of holding still, is illustrated by postural contractions. A graphic record of the hand holding a stylus shows that the member is only approximately at rest. This is also demonstrated by the standard "steadiness test." De Meyer (10) and others have shown that frequency of the cycle of the muscle twitch, or tremor, at ordinary temperatures, is c. 6–10 per second. In fixation, the only movement is the tremor.

b. The moving fixation is so called because it consists of the slow extension of a movement of holding still. Applying the foot brake of an automobile, inserting a key in a lock, handling a fork or spoon, are moving fixations. The unit element in such movements is the tremor, for if a very short movement is attempted, its amplitude is determined by that of the tremor. Ability to make movements more and more minute is limited, not by sensory methods of control, but by this fundamental tremor element, as was determined by Anderegg (1) and Scott (41). The excursion of simple forms of moving fixation results from tremor increments in one of the opposing muscle groups. Since the movement elements occur as frequently as 10 per second, and since the increment is very slight, developing little or no momentum in the moving member, the movement can be changed at any movement element, i.e., with any tremor; it is subject to "control." The slow movement is probably due to the slight increase in algebraic sum of the number of muscle fibers contracting the positive muscle group, as against the number of fibers contracting in the antagonistic muscle group.

c. In a balistic movement, a group of muscles is actually thrown. This fact was recognized in pianoforte playing as early as 1870 by Deppe, when describing the hammer-like beat strokes of the loose movement. Dodge

noted these fast movements in the case of the eyes before 1900 (11). The balistic movement is unique in that it is a momentum movement. In reporting his early studies of handwriting in 1907, Freeman observed that more time is required to stop than to start a loose movement (19). In such movements contraction of the muscles ceases before the member has completed one-half of its excursion, and it flies through the remainder of its course with all muscles relaxed (39, 48, 49, and 35, pp. 107–108 and 153–154). The balistic movement is readily identified, because its course is marked by an unquavering line (curved, if the member pivots about a joint). Control of the movement is exercised in the initial impulse. When once under way its course cannot be changed. From the fact that the course of the balistic movement is a smooth line, and its time value is not more than that of a half tremor, it is inferred that the balistic stroke coincides with the tremor. A balistic stroke may be terminated in one of three ways: (1) by the contraction of opposing muscles; (2) by an obstacle; or (3) by dissipation of the momentum, as in writing or the golf stroke.

ADVANTAGES OF THE BALISTIC MOVEMENT

When the alternative is a choice between free, balistic movement and tense, moving fixation, evidence favors the balistic movement.

1. The balistic is the least fatiguing of movements, as muscular contraction involved continues only during the initial phase of the movement. Summarizing recent work of Denny-Brown, Adrian and Bronk, Eccles and Sherrington, Fulton says: "A motor unit discharging at 10 per second may continue in activity for indefinite periods without fatigue" (21). The mechanics of the process, with particular reference to piano playing, are described by Ortmann, where he explains the superiority of the Schleuder- and Wurf-Bewegungen which play such an important part in modern German piano pedagogy (35, pp. 102–112).

As is presumably the case in the heart-beat, there is relaxation between contractions. In moving fixation the antagonists continually pull against each other. Contrast walking on ice with ordinary walking. Recognition of this fact has been retarded because common sense suggests that short movements must necessarily be less fatiguing than long movements and must require less time. However, Stetson reported as early as 1905, that in rhythmic contractions of finger or arm, as when marking time with a baton, the duration of the beat stroke is independent of its length (47). This observation has been frequently corroborated in the Oberlin laboratory and elsewhere (Isserlin (26), 1910; Freeman (18), 1914; C. S. Myers (33), 1921; Bott (6), 1923; Throner (52), 1926; Radachy (37), 1930). This observation, that the shortest movement is not necessarily the least fatiguing, was stressed as an important basis for the distinction between the approach of the (British) National Institute of Industrial Psychology and that of Scientific Management, at the Barcelona Congress on Vocational Guidance in 1921 (33). One of the working rules of the National Institute calls for sub-

stitution of sweeping, cursive excursions for short, angular movements (34, p. 87).

2. Speeded movements, if executed with tense muscles, are more apt to result in breakdowns than they are when momentum movements are employed. This is particularly true when movements are short (Forbes (17), 1926; Stetson (46, p. 96), 1928; Radachy (37), 1930). This fact was demonstrated in the case of pianoforte playing by the founders of modern methods of teaching: Deppe, Leschetizky, Godowsky, and the Masons. Forbes found that in rapid handwriting, and in tapping triplets, short, unaccented strokes fuse, with the result that an entire stroke is omitted. This phenomenon is responsible for the deterioration of handwriting which occurs in rapid note-taking. In speech, speeding results in dropping out arresting consonants. At the speed of 4 to 4.5 syllables per second, pronunciation of a double consonant is no longer possible, for it entails 8 to 10 movements per second, a speed which is only possible when movements are evenly spaced. This suggests a plausible explanation for the fact that, in its evolution from the Latin, the French language dropped its final consonants. Another case of breakdown is the blocking of speech experienced by stammerers.

3. The balistic movement is the most powerful because it utilizes momentum and the force of body weight. Hence the advantage of swinging a member through a complete arc, particularly when it is lengthened by a tool, such as an ax, pick, or sledge-hammer (15). Contrast the carpenter hammering with the child pushing a nail into a board; or the woodsman's free sawing with the amateur's moving fixations. The skilled athlete throws his arm away in pitching a ball, throwing a javelin or discus, and following-through in the golf stroke. A beginner is apt to "make hard work" of any new coördination.

4. The balistic movement is the most rapid, in the long run. This has been demonstrated in tapping (37), piano playing (35), typewriting, baseball pitching, and packing chocolates (34, p. 92).

5. The loose movement has an advantage over the tense movement in that it does not produce writer's cramp (20, p. 16), telegrapher's wrist (44), pitcher's "glass arm," pianist's shoulder, and other forms of occupational neuritis.

6. Finally, when speed is a consideration, loose movements are more precise and accurate than moving fixations. Radachy found that they are more uniform in length of stroke. Ortmann has demonstrated that they are essential for coördinate execution of rapid arpeggios (35, pp. 282–294). Baseball and golf professionals, and vocal instructors, for whom accuracy is a first consideration, recognize the advantage of relaxed muscles. But perhaps the most common demonstration of accuracy in rapid movement is found in the cycadic action of the eyes in vision.

COÖRDINATE ACTION A COMBINATION OF DIFFERENT TYPES OF MOVEMENT

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COÖRDINATE ACTION A COMBINATION OF DIFFERENT TYPES OF MOVEMENT

Reference to possibility of choosing between balistic and fixation movements risks the suggestion of an over-

simplification of the facts. An integrated organism is never free from postural fixations, which constitute the foundation upon which balistic movements are superimposed. The body acts very much like a crane or derrick, which consists of a central, upright mast and a lateral boom. Movements of the boom involve tensions on the mast. In like manner, no movement of the finer muscles is possible unless there is a fixation in the larger muscles. Rapid walking consists of balistic extensions and flexions of the legs, at the same time that an upright posture is being maintained in the trunk. Typing, piano-playing, handwriting, the use of tools—manipulations of any sort—employ balistic activity, but at the same time the pelvic and shoulder girdles are held rigidly fixed. In speech the balistic breath pulses which constitute the syllables are expelled by the fixations of expiration. Reading, which involves momentum movements of the eye muscles, is dependent upon a fixed posture of head and shoulders. Fixation movements are just as essential for skilled activity as are balistic movements. But inasmuch as balistic movements are less fatiguing than fixation movements, more powerful, more rapid, more accurate, and because they may be repeated for longer periods without cramp or breakdown, the demands of efficiency call for a maximum employment of balistic movements.

A review of the literature of applied motion study is facilitated by employment of some sort of a table of movements. Such a classification is presented in the following outline:

A CLASSIFICATION OF WORK TYPES TO FACILITATE ANALYSIS OF THE MOVEMENT PROCESS (WITH SAMPLES OF THE SUB-TYPES)

I. From the standpoint of the basic posture
  1. Those types in which posture is determined by the work situation. (Height of the machine or seat, location of controls, or disposition of material.)
    (1) Operating machinery
    (2) Operating street cars, trucks, cars
    (3) Such manual activities as are conditioned by the work situation
    (4) Visual work, similarly conditioned
    (5) Milking cows
  2. Those in which the worker may determine the posture
    (1) Those featuring locomotion. (See II, 1)
    (2) Those featuring upper-arm movements. (See II, 2)
    (3) Those featuring lower-arm movements. (See II, 3)
    (4) Those featuring vocal movements. (See II, 4)
    (5) Those featuring visual movements. (See II, 5)

II. From the standpoint of balistic movements
  1. Those featuring locomotion
    (1) Without mechanical aids
      a. Carrying loads
      b. Track athletics, swimming, football
    (2) With mechanical aids
      a. Wheeling and trucking loads
      b. Pushing and pulling passengers
      c. Rowing
  2. Those featuring upper-arm movements
    (1) Without tools
      a. Bilateral
        (a) Lifting and tossing activities

(1) Handling grain, cement, mail, melons, coal, etc.
(b) Throwing the basketball
b. Unilateral
(a) Distributing mail
(b) The throwing games Pitching the ball, horseshoe, discus, javelin
(2) With tools (thus involving manual fixations largely determined by the shape of the tool-handle.)
a. Bilateral
(a) Work with the shovel, pitch-fork, ax, hoe, etc.
(b) Handling the steering-wheel of automobile or boat, and capstan
(c) Use of the bat, golf-club, oar
b. Unilateral
(a) Use of the saw, file, hammer
(b) Handling the tennis-racket
(c) Bowing stringed instruments, playing the trombone, conducting with the baton
3. Those featuring lower-arm movements
(1) Handling, without gripping materials
a. Wrapping, packing, sorting
(2) Fingering, without grasping
a. Typing and comptometer operation
b. Telegraphy
c. Piano-playing
d. Fingering the stringed and valve instruments
(3) Those necessitating gripping the materials
a. Milking
b. Handlaundering, brick laying
(4) Those necessitating gripping the tools
a. With the palm
(a) Use of the hammer, screw-driver
(b) Use of the lever, control
(c) Carrying a suit-case or pail
b. With the fingers
(a) Work with pencil, scalpel, calipers, knife, brush, needle
(b) Knotting threads
4. Those featuring the vocal movements
(1) Speech
(2) Singing
5. Those featuring the eye movements
(1) Reading
(2) Other forms of visual perception

REVIEW OF THE LITERATURE OF INDUSTRIAL ENGINEERING

The literature of industrial engineering and applied psychology confirms the conclusions stated above with reference to the advantages inhering in a maximal employment of balistic movements. Samples of published studies may be cited.

1. Studies concerned primarily with basic postural fixations

a. Cases in which the worker is not free to choose his own posture. From the beginning of the industrial efficiency movement, attention has been given to the question of optimal height of work-bench and seat (25). Similarly, much attention has been given to this factor in connection with development of good posture in school children, for the purpose of preventing spinal curvature, constriction of the chest, and eye strain. In 1914 Ford adopted two different heights for chassis assembly-lines, one 2½ in. higher than the other; and manufacturers of cook-stoves, kitchen-cabinets, sinks, etc., have for a number of years given attention to optimal height for work done by women. Benkert's study presents photographs

of women working in postures which involve prolonged strain in hips and shoulders (4). This is typical of many situations still existing in which sufficient attention has not yet been given to posture. Conditions are described in which women reach to the floor for materials, or sit stooped over on a bench because the working parts of the machine are too low to permit an erect posture. As an illustration of methods that have been frequently taken for the correction of postural fixations, reference may be made to an unpublished study. A few years ago, in the Fort Wayne plant of the General Electric Company, girls were operating machines by treadles which projected in mid-air. The operators sat on stools, and the only foot-rest was the rung of the stool. Each time the treadle was operated it was necessary to tense the muscles of the trunk in order to avoid falling forward from the stool. The new set-up, suggested by Beulah K. Kinna (22), provided a platform foot-rest in which a disc was inset. With the heel resting on the platform, the machine was operated by pressing the disc with the toe. Meantime, part of the body weight was borne by the foot which rested firmly on the platform. Analysis of the movement process shows that this new seating arrangement permits workers to operate by balistic movements of the foot under conditions which do not necessitate additional postural tensions.

Legros and Weston (29) and Smith (43) report conditions in the laundry industry in England, in which reconstruction of the garment-press and ironing machines has eliminated severe postural strains. With one of the older types of machine, the table falls to the floor unless its forward movement is checked by the body of the operator. There are other types of machine, like the guillotine shear, in which the process of holding steel sheets in place requires fatiguing fixations. One thinks also of the increased ease with which newer cars may be operated, in comparison with pioneer models. With contemporary cars (and pavements) one holds the car on its course with very little tenseness of legs and trunk.

The arrangement of levers, wheels, cross-bars, and controls to bring about the maximum of effect with the least effort (so far as it is a physiological problem) is primarily a question of determining that work posture which involves a minimum of fixations. Kuehne, using a dynamometer, determined relative force of movements made in different directions, when levers, capstans, and wheels were set at different elevations (28). Similarly, Lossagk, working in the Laboratorium fuer Psychotechnik at Berlin, determined optimal angles and most advantageous distance from the body for the levers (32).

b. Cases in which the worker may choose his own posture. Operations in which the worker has some freedom to determine his own posture throw further light on the most efficient types of movement. If one notes how an expressman lifts a trunk to his shoulder, one may observe that the secret of the trick consists in keeping the load as close as possible to the body. Lifting the load in a vertical direction permits a balistic upthrust of

legs and arms, the trunk meantime maintaining its normal, upright position. Lifting at any other angle involves a dangerous strain on the muscles of back and abdomen. When lifting a piano or heavy piece of furniture a drayman bends his legs rather than his back, and, if possible, presses his chest against the load. Experiments by Bedale (3), Cathcart and others (8), to determine the most economical method of carrying loads, indicate that suspension of the load from the shoulder by a yoke is less fatiguing than carrying it on the head, on one shoulder, by the hands, in pails, on a tray, or in a knap-sack. The yoke permits a more "normal posture" than any of the other methods. In other words, the postural fixations are at a minimum; walking may be done more freely, with less general tension and less constriction of the chest.

A study made at the Berlin Institut fuer Psychotechnik compared the relative fatigue incident to weight-lifting and weight-holding. What was designated as equivalence having been established between the two processes in centimeter-kilogram-seconds, the "static" process of holding a weight was found to be from 3 to 6 times more fatiguing than the "dynamic" process of lifting it (30). Although the report makes no reference to types of movement involved, the graphic records suggest that the "dynamic" operation involved a moving fixation, whereas the "static" work was done with a postural fixation. Thus experimental confirmation is given to the empirical observation that postures which require the subject to "stand still" are more fatiguing than those which may be maintained by frequent shifting of position.

2. Studies concerned primarily with balistic movements

a. Those featuring locomotion. In the case of leg movements the analogy to a derrick, cited above, is hidden because in primates the mast does not rest upon the ground, but is supported by at least two alternately moving booms which change the mast's geographical position. Despite the unmachinelike arrangement of the parts, members in the animal machine nevertheless move about a central trunk. In brisk walking the distinctive activity consists of momentum movements of the muscles of hips and legs, pivoting about the pelvic axis. These momentum movements are possible only when the trunk remains relatively rigid. This fact would be more readily recognized if animals generally followed the practice of standing on their heads. The analogy with the derrick would then be more apparent. It is obvious, however, that even so elementary a movement as walking is not completely described in the statement that it involves a postural fixation in the trunk and balistic movements in the legs. In addition to the hip joint there are, in the legs, secondary pivots in knees, ankles, and toe joints. When moving rapidly over ground which furnishes traction, the muscles of lower leg and toes contract balistically. This is quite evident in the case of running. When the ground is slippery one walks stiff-legged, employing "controlled" moving fixations. Slow walking of any sort involves fixations in the limb bearing the weight. The muscles

of instep and toes also figure in an important way. In a flat-footed person a considerable share of the fatigue of walking is doubtless due to his substitution of moving fixations for balistic movements of the toes. The rôle of the arms in walking is apparent. They contribute to the economy of the process by helping maintain balance and assist momentum, as they swing freely at all joints.

Schmidt was able to carry 47½ tons of pig iron from the ground to the car in a day, whereas the usual rate was only 12½. F. W. Taylor attributed this to two factors: selection of the physically capable man, and properly distributed rest-pauses. H. E. Burtt reflects the customary explanation when he says: "This was due to nothing except the fact that a man was allowed to recover from fatigue before a great amount of it had accumulated" (7, p. 174). Interpreters of this historic experiment have quite uniformly overlooked the significant fact that Taylor insisted that the laborer be under weight a minimum proportion of the time, and that his movements be brisk. "A pig-iron handler," he wrote, "walks on the level at the rate of one foot in .006 minutes. It is a fact, however, that many pig-iron handlers ran with their pig as soon as they reached the inclined plank. Many of them also would run down the plank after loading the car. So that when the actual loading went on, many of them moved at a faster rate than is indicated by the above figures" (51, p. 91). In other words, these laborers substituted balistic movements of the brisk walk and the trot for slowly moving fixations which characterize the pace of average unskilled laborers. When one observes intelligent men at work one frequently notes that they prefer to utilize the momentum of the balistic movement. Thus plumbers run upstairs when carrying a heavy pipe, and stevedores push their trucks up the gangplank at a trot. Using a more elaborate technique than that employed by Taylor, Crowden obtained similar results (9) when determining rate of metabolism during the operation of wheeling brick. Measured in terms of oxygen consumption, the most favorable pace was found to be a "brisk walk."

Computation of optimal weights of loads to be transported by barrow (23, pp. 54–57), hod, tray, knap-sack (8), mail-bag, basket, suitcase, etc., is a matter of determining the greatest weight which can be handled with momentum movements. For a given individual there is obviously an upper limit to the load which he can move with the speed required to make balistic movements. In order to maintain direction and control in managing heavier loads, one tends to move more "steadily," i.e., to substitute slower, and more fatiguing moving fixations.

b. Those featuring upper-arm movements. The analogy between organism and derrick is quite evident in the case of arm movements. Lifting loads is a great deal like the action of the steam-shovel. First, there is postural fixation in legs and trunk, including the respiratory apparatus, corresponding to stationary portions of the machine. Second, there is the arm of the apparatus, which moves rapidly. And thirdly, distal to the rapidly moving parts, is the hand which grips the tool or

load, just as a clam-shell grips its load. The shoulder joint is the principal pivot between the muscles which execute the balistic movements and those which hold the posture. If one stoops, hips, knees, and vertebrae also act as pivots, and the fixations are more largely of the moving type than is the case if one remains erect. Most forms of skilled labor involve this tri-partite relationship between the momentum movements and the fixations, namely, (1) basal posture, (2) rapid, balistic movement in the intermediate muscles, as they pivot freely about a joint, and (3) fixations in the fingers.

The generalization made above with reference to optimal loads is equally valid when applied to upper-arm movements. Taylor estimated the optimal load for hand shoveling to be 9½ kilograms (51, p. 65). Farmer determined the optimal size for the sheets of tin to be supplied to machine operators in a box-factory (16). Experiments might well be set up to check the empirical conclusions as to number of bricks to pick up, when they are to be pitched from man to man; size of grain sacks, cement bags, etc., when it is necessary to handle them without labor-saving machinery.

German trade schools have been reporting some significant studies of improved methods used for instruction of apprentices for such crafts as those of lock-smith and machinist. Kymograph records are taken of movements involved in filing, hammering, and sawing. Although apparently no analysis is being made of the movement process, the graphic records suggest that acquisition of skill consists largely of learning to perform these tasks with free, loose balistic strokes (5). Instructors in bowing of stringed instruments long since learned this lesson. A similar technique is employed by coaches of base-ball, tennis, and golf, as is evidenced by their use of such terms as "follow-through." As a reminder that these balistic contractions of the limbs are always made from a postural set, and that the demands of efficiency call for a minimum of fixation in maintenance of the posture, one may refer at this point to the coach's frequent admonition: "Now loosen up! Relax!"

c. Those featuring lower-arm movements. Paradoxically, that field of industrial skill in which most attention has been given to the movement process is pianoforte playing. The method used by Deppe in the '70s, and elaborated by Leschetizky at his school in Vienna, has become the standard practice of conservatories. Today children are taught use of "loose" balistic fingering and avoidance of "stiff" moving fixations. This does not mean, of course, that the fingers are completely relaxed. As a matter of fact, each finger is fixed in such fashion as to serve as a hammer-head, pivoting freely at knuckles or wrist. Movements up and down the scale involve moving fixations from the elbow, and fortissimo strokes require pivoting from the shoulder. The trunk moves freely from the hips, the main postural fixations being below the pelvic girdle. For more detailed treatments one may consult Stetson (48) and Ortmann (35).

Handwriting is another field in which American instruction method has long employed the freely moving momentum strokes. It was in the first half of the last century that P. R.

Spencer developed the method which made American penmanship the best in the world. The correctness of the essential elements in Spencer's method has been confirmed by Freeman's experiments. In describing the handwriting of an expert, he finds that "the penholder is grasped in an easy manner by the thumb and first two fingers" (20, p. 33). The sideward movement by which the hand is moved from left to right consists of moving fixations pivoting in wrist and elbow. The strokes which form letters are made by a combination of (1) movement of the whole arm, hanging freely from the shoulder, and (2) extension and flexion of fingers and thumb, pivoting at the knuckles. In order that the arm should be able to move freely, Freeman recommends that the body face the desk and be kept erect, so that its weight will not rest upon the writing arm (20, p. 106).

OCCUPATION CRAMPS

It is in the varieties of work which employ finer muscles that there is the highest incidence of occupational cramp. One thinks of writer's, milker's and telegrapher's cramp, of pianist's wrist, and pitcher's "glass-arm." In the study of telegrapher's cramp made by Smith, Culpin and Farmer, a sphygmograph record of pressure which the operators exerted when using the key showed that those susceptible to cramp exerted considerably greater pressure than did operators whose muscles did not cramp. Expressed in the scale-units employed, "the cramp group exert 44 per cent more pressure than the others" (44, p. 5). Moreover, a comparison of normal pressure with that exerted when operators were working for speed reveals the significant fact that those who handle the key with the lightest touch do not increase their pressure when speeding, whereas in the case of all the other operators pressure increases with speed. However, the cramp cases use so much pressure when working at normal rate that they add only 9 per cent more pressure when speeding. These facts suggest that operators susceptible to cramp work with tense muscles, whereas those who are free from cramp operate with loose movements. Incidentally, it is worth noting that substitution of the key which moves in a lateral direction for the vertical key is the result of the observation that the lateral key may be operated with a looser wrist. In writing, Freeman says, "The penholder should be grasped loosely in order to avoid cramping of the hand" (20, p. 16).

Analysis of the process of milking cows suggests that "milker's cramp" is experienced by those who milk with tense muscles rather than those who use balistic movements. Dunlop observes: " 'Milker's cramp' usually occurs across the back of the hand. This is evidently due to the straining of the tendons of the fingers. It is said to occur among milkers who squeeze the teat with all four fingers at a time. Good milkers feel fatigue first in the wrist and forearm" (13). The basic rule for avoidance of occupational cramps is that fatigue should develop first in muscles which maintain the essential posture. The pitcher, for example, should first feel soreness in back and shoulders. If fa-

tigue is felt first in the fine muscles, it is an indication that these muscles are being used for making fixation contractions.

The use of tools involves movements incident to the grip. As a tool is functionally just an extension of the hand, it should be so constructed as to permit fullest exercise of the loose movements with which the unimplemented hand works most efficiently. A first qualification for a tool is balance. A poorly balanced racket, bat, hammer, or ax twists the muscles; its use sets up compensating tensions. A second qualification is adaptation to the subject's grip. Klemm and Sander found that, in performing a standard task with a screw-driver, the loss in energy, as registered by a dynamometer, varied considerably with different forms of tool-handle. The handle found least fatiguing has a uniform diameter except for a cone-shaped indentation for the index finger (27). Rubarth (40) found that, in the case of screw-drivers, the greater the diameter of handle the greater the efficiency (within limits of from 18 to 40 millimeters). In other words, the most efficient handle is that which can be manipulated with least pressure.

When carrying a heavily loaded pail, the tension in the fingers is less if the wire handle is covered with a grip. Man has long asked the question: which is heavier, a pound of lead or a pound of feathers? The illusory experience which gives rise to the question is due to the fact that weight which may be handled by the freest movements gives the impression of being lighter. The lump of lead appears heavier because it produces greater tension. Several size-weight illusions are clarified by application of this generalization. Seashore (42) enumerates and suggests a subjective explanation of these illusions.

d. Those featuring the vocal movements. Giving utterance to the many tones and syllables in the human repertory of song and speech involves balistic contractions of lips, tongue, lower jaw, and throat in a variety of ways. Each syllable is a balistic pulse in a stream of air from the lungs, the volumn of which is controlled by fixations in the rib cage and abdomen (45, 46 and 50). Strain and fatigue in speech and singing result from too continuous or too extensive contractions of the fixation type, particularly when one attempts to make balistic movements with muscles that are already fixed; in other words, when phonation is done with tense muscles. Hence the coach's repeated advice to relax. And to this may be added the admonition to lower pitch of the voice, as adjustment of vocal cords for production of higher tones is apt to involve a tightening of throat muscles.

e. Those featuring the eye movements. The musculature of most universal significance is that of the eyes, since the "brain worker," as well as the manual laborer, works with his eyes. The receptive function of the eye is dependent upon the motor apparatus which affects accommodation and convergence. The eye moves in a socket much as does the leg. However, the eye is held in its socket by suction, and is comparatively free from the fatigue incident to maintaining posture. The posture essential to vision consists of fixations in the neck muscles which

steady the head. As the eye pivots in its socket, under the direction of recti and oblique muscles, the movements are usually very rapid. Dodge found speed of the eye movement, or cycad, for angles of 5° to 40°, to range from .029 second to .1 second (12). The ciliary muscle, which focuses the lens, also moves balistically. When recti, oblique, and ciliary muscles move freely, there is little fatigue. Eye-strain begins with employment of the moving fixations of pursuit-movements. Even when eyes are perfectly shaped, clear vision is impossible without employment of fixations when (1) illumination is insufficient, (2) the objective is moving, (3) the body is under motion, (4) the objective is too close or too distant for rapid accommodation, and when (5) fusion of the retinal images is imperfect (i.e., when one or another of the muscles is weak). Lenses are obviously employed to reduce number of necessary fixation movements to a minimum. Artificial illumination has, of course, been responsible for some of the eye-strain. One of the older forms which is most deleterious is that involving the use of a number of exposed lamps. The eye tends to move reflexly toward any bright object, particularly if it is moving. When one attempts to resist this reflex, he employs fixation movements.

RELATION BETWEEN THE MOVEMENT PROCESS AND THE FATIGUE OF ATTITUDES

Experimenters have long noted the distinction between primary fatigue and a second type which may be called fatigue of attitude. The first is concerned with overt movements of the skeletal muscles. The second has frequently been called mental fatigue, and has been attributed to activity of the central nervous system. Recognition of the movement of fixation as a work process provides a theoretical explanation for "mental fatigue." This theory has, at least, the merit of being more easily put to the test of laboratory verification than theories involving central processes. According to the theory here advanced, attitudes are (or involve) complicated forms of postural set, maintained by fixation movements. The type case is the attitude of attending. Concentration involves tension in a large portion of the striped musculature. As illustrated by the instance of the moving light in the visual field, any distraction is fatiguing because of the strain and tension involved in counteracting "involuntary attention" to the disturbing stimulus. Just as it is fatiguing to stand still, so maintenance of an attitude involves muscular work. Some attitudes are more fatiguing than others. The most taxing are those which "conflict," or do not synchronize, with activities in which one is overtly engaged. To amplify this generalization would open the whole field of mental hygiene, a domain beyond the limits of this paper.

RHYTHM

One further topic which may logically be included is rhythm, so frequently mentioned in the literature of industrial psychology. Although it has seemed desirable to lay special emphasis upon elements of movements which occur simultaneously, complete-

ness of treatment calls for at least brief reference to the successive process involved in work. In British as well as American discussions of skilled movements, the term "rhythm" has been used to cover two distinct phenomena. In some instances the reference is to rate, or speed, of movement. Burtt comments: "Certain experiments have brought out the fact that there appear to be optimal rhythms for different muscle groups. A machine that is devised to be operated by the hand should presumably have a different rhythm from one operated by the foot, or by the finger" (7, pp. 125–126). When the term refers to speed of movement, it is probably better to use some such phrase as "repetition time." The frequency with which a movement may be repeated varies from member to member. Movements of the trunk obviously require more time than those of tongue or finger. But repetition time also varies with type of movement involved, particularly if the movement is continued for an extended period of time. Studies, such as that of Lenfest (31), aimed at computing most accurate repetition time for a given member, need to determine whether the subjects are employing balistic or fixation movements.

In other cases the term "rhythm" refers to a succession of motions in a pattern in which at least one of these motions receives an accent. This is the sense in which the term is used in poetry and music. Reinhardt was dealing with pattern of movements when he observed that, in sorting metal plates, there is economy in giving two counts to the process of picking up the disk and dropping it into its proper box, and one count to the return movement, or back-stroke, of the hand (38). Other examples are found in Farmer's studies of "dipping sweets" and packing chocolates (14). The method which yields greatest output involves a cursive movement not unlike the circular movement of the conductor's baton. A movement of this type involves a beat and a back-stroke; each is a balistic movement, the accent falling obviously on the beat-stroke. It is this sweeping, cursive type of action which Myers has emphasized as basic to economy of effort (34, p. 87).

CONCLUSION

The aim of this paper has been to supplement, rather than to criticize, the work of others. Economy of effort requires careful studies of the path of the movement—such studies as have been made with varying emphases by numerous investigators in Europe and America—in order that superfluous movements may be eliminated. It is equally important, however, that attention be given to the various types of movement which may function simultaneously in the integrated individual.

Manuscript received September 12, 1931

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News Notes

BRUÈRE ELECTED PRESIDENT OF PERSONNEL RESEARCH FEDERATION

At a meeting of its Administrative Board on March 14, the Personnel Research Federation elected Henry Bruère President for the coming year. Mr. Bruère is President of the Bowery Savings Bank. L. J. O'Rourke, retired President of the Federation, has taken a place on the Administrative Board.

NATIONAL VOCATIONAL GUIDANCE ASSOCIATION CONVENTION

The Annual Convention of the National Vocational Guidance Association was held at the Willard Hotel, Washington, D. C., February 18 to 20, 1932, with a registered attendance of about three hundred from all parts of the country, representing schools, social service agencies, and industrial organizations.

The Program Committee offered a wide array of topics, with sixty-seven speakers appearing on the program in the two and a half days. The general theme was one of vital interest to all at this time, namely, "Vocational Guidance in a Changing World."

Dr. Ross L. Finney, Associate Professor of Educational Sociology, University of Minnesota, discussed "Education, Whither Bound?" Dr. Abraham Lefkowitz, Vice-President of the American Federation of Teachers, forcefully though somewhat pessimistically attacked the problem of "Organized Labor's Attitude toward Vocational Education and Guidance." He took the educators to task for their lack of knowledge concerning facts and conditions in the industrial world. During the discussion that followed, several members of the audience charged that the speaker was too sweeping in his generalizations; that vocational counselors are acquainted with conditions in the occupations. This address provided one of the important periodical challenges to the academician to close the gap that exists between industry and education.

At the Annual Banquet, Mr. Edward A. Filene talked on "Living in a Machine Age," and Dr. C. A. Prosser gave a stimulating address on "Educating for a Machine Age." Dr. Prosser cited instances of technological unemployment, and challenged the audience to think, study, and consider well before advising and training students for entrance into certain occupations which may soon become mechanized.

At other general sessions, Dr. Harry D. Kitson, who attended the Seventh International Conference on Industrial Psychology at Moscow last September, reported on Vocational Guidance in Russia; Mr. Spencer Miller, of the Worker's Education Bureau, talked about the effect of social, moral, and economic trends on the problem of occupational choice and adjustment; Dr. Grayson N. Kefauver discussed "Objectives of Guidance in Secondary Schools," outlining the procedures to be followed in a two-year investigation of guidance under a grant from the Carnegie Foundation.

The Personnel Research Federation, as in previous years, arranged a very interesting session for the various personnel groups which met in Washington at this time. The topic chosen for discussion was "Who Should Go To College?" Miss Sarah Converse and Dr. A. B. Crawford dealt with the question in a broad, general way. Dr. Ben D. Wood discussed the standardized achievement tests used in the Pennsylvania Survey as measures of the growth of the individual in order to determine college fitness; and President Harvey N. Davis of Stevens Institute of Technology described

the interesting summer camp experiment which was reported in the February, 1932, issue of The Personnel Journal.

In addition to the general sessions, group conferences centered around the following topics: Guidance—for the Handicapped; for Adults; in the Y. M. C. A.; through the Social Agency; through Service Clubs; and in the Continuation School.

Other sections on the following topics were also scheduled: State Guidance Programs and Activities; Rural Guidance; Placement; Occupational Research; and College Teachers of Guidance.

Two of the unique features of the Convention were: first, open round-table discussions on five different topics pertinent to Vocational Guidance. There was no planned program for this, and no prepared speeches. Instead, an expert in each of the fields answered questions and conducted the discussion in the light of these questions. Some of the questions had previously been submitted by mail, while other questions were raised by members in the group. The second innovation was a round-table discussion on "Guidance Through Service Clubs," where appointed representatives of various service clubs discussed their common problems. Other convention delegates were allowed to attend and to listen to the discussion from the side lines, but the discussion itself was limited to experts who centered their attention upon common problems, whereby a greater degree of unity and coherence was attained. It was felt that those who sat in on the discussion benefited by this procedure. To the writer, this method of conducting a discussion seems to have valuable possibilities, and it is hoped that the procedure will be experimented with and used more frequently.

At a breakfast meeting, the Occupational Research Section anounced the publication of a pamphlet on *The Printing Trades*, by Florence Clarke. This book, soon to be published by International Textbook Company, is the result of several years' work on the part of the committee in regard to the content and form of occupational pamphlets. It may be regarded as a "model" for future occupational pamphlets.

It was an auspicious occurrence that the first of a series of vocational guidance broadcasts prepared by the National Advisory Council on Radio in Education, and the National Vocational Guidance Association, was broadcast from coast to coast on the first day of the convention, and that Dr. John M. Brewer, a pioneer in this field, gave the first address, his subject being "Vocational Guidance—What It Is."

At the business meeting, the following officers were elected for the coming year: President, Miss Mildred E. Lincoln, Counselor, Monroe Junior High School, Rochester, N. Y., at present Visiting Instructor at Teachers College, Columbia University; 1st Vice-President, Dr. William M. Proctor, Stanford University; 2nd Vice-President, Dr. Arthur J. Jones, University of Pennsylvania; Secretary, Miss Helen Dernbach, Director of Vocational and Educational Guidance, South Bend, Indiana; Treasurer, Mr. Warren K. Layton, Board of Education, Detroit, Michigan.

—Roy N. Anderson,
Teachers College,
Columbia University.

PENN STATE'S SUMMER MANAGEMENT COURSE

The Seventeenth Annual Summer Management Course of Pennsylvania State College is to be held from June 8 to 16. This summer course, inaugurated in 1915 by Hugo Diemer, attracts many foremen and higher executives with plant experience who want to increase their knowledge of plant management by coming to the college.

Topics for study this year include: industrial organization; principles, methods, and applications of production control; trends in personnel management; principles of operation study; economic control of quantity and quality; methods of industrial training; causes of budget failures; factory layout; and the development of executive ability.

BIBLIOGRAPHY OF MANAGEMENT LITERATURE

The American Society of Mechanical Engineers has revised and enlarged after four years its *Bibliography of Management Literature*. More than 4500 books and

articles appearing during the past twenty-five years are listed and briefly annotated.

It is interesting to note that the two longest sections of the classification are "Personnel" and "Industrial Relations." Other sections of special interest to personnel men are on incentives, job analysis, fatigue, safety, industrial psychology, motion study, and insurance.

This excellent bibliography may be obtained for $2.00 from the Society, at 29 West 39 Street, New York.

NEW PSYCHOLOGICAL PUBLICATION

The Psychological Exchange is the name of a new magazine edited by James Hargan and Norman Powell. It aims to act as "an open forum for psychologists in the discussion of their professional problems." Titles are printed of research now under way in laboratories throughout the country, and in other ways the attempt is made to inform psychologists concerning what other psychologists are doing.

The Psychological Exchange is published at 507 Fifth Avenue, New York. Annual subscription rate, $3.00.

UNIVERSITY OF KENTUCKY PERSONNEL BUREAU

The Personnel Bureau of the University of Kentucky now publishes a monthly *Personnel Bulletin*. The Bulletin is proving to be a valuable means of acquainting both faculty members and students with the work of the Personnel Bureau and with campus personnel problems. Each number is devoted to a general topic. One reported studies about probation students. Another, devoted to the marking system, carried brief articles on "What Should College Grades Measure," "A Suitable Marking System," "Is Sex a Factor in the Assignment of College Grades?" and "The Effect of Showing Grade Distributions to Instructors."

The Bureau is in charge of J. B. Miner, assisted by Henry Beaumont.

PERSONAL ITEM

THOMAS M. STOKES has been appointed Supervisor of the Agency Instruction Division of the Metropolitan Life Insurance Company.

SURVEY OF MOOSEHEART GRADUATES

One of the first steps of the Laboratory of Child Research connected with The Child City of Mooseheart has been to make a survey of graduates of that institution. The Laboratory was established in 1930 under the Directorship of Martin L. Reymert.

Questionnaires were returned by 78 per cent of the graduates. A number of the findings related to vocational matters may be cited. Sixty-four per cent of the graduates followed, at least for a time, the vocation for which they received most extensive training at Mooseheart. The range of occupations represented is wide. While most of the graduates seem to be adjusting favorably in their vocational careers, there are indications that a considerable number are having difficulties. This suggested to the authorities that Mooseheart needs a comprehensive system of classification, vocational guidance, and follow-up.

EVENTS IN ADVANCE

JUNE 8–16. *Seventeenth Annual Summer Management Course of Pennsylvania State College.*

JUNE 20–25. *American Association for the Advancement of Science.* Syracuse, New York.

AUGUST 21–23. *Third International Conference of Eugenics.* American Museum of Natural History, New York.

AUGUST 22–27. *Tenth International Conference of Psychology.* Copenhagen.

AUGUST 24–27. *Industrial Relations Conference.* Auspices of National Conference of Y. M. C. A.'s, Silver Bay, New York.

SEPTEMBER 8–10. *Annual Meeting of the American Psychological Association.* Ithaca, New York.

Personnel Books

EDITED BY O. MILTON HALL

PSYCHOLOGY AT WORK

Edited by Paul S. Achilles. New York: McGraw-Hill, 1932, xiii + 260 pp., $2.50

Reviewed by HAROLD E. BURTT, *Ohio State University*

The book consists of a series of lectures delivered under the auspices of the Psychological Corporation in New York City. Effort is made to cover most of the outstanding fields in which psychology makes contact with practical problems. The treatment in a work of this size must necessarily be somewhat brief on many points but a group of specialists was selected well qualified to discuss the particular topics assigned to them. With one exception, they are well known in the literature for their contributions along the lines involved in the present volume. The editor is wise in presenting the lectures without an effort to tie them together in some form of continuity because such an effort would probably be unsatisfactory, if not impossible. The reader will, however, have no difficulty in making the transition from one topic to another. Not all the topics discussed are of interest to readers of the *Personnel Journal* and such topics will be mentioned very briefly in this review.

The chapter by Meek on "Psychology and the Pre-School Child" summarizes the early studies by means of diaries, recounts the devising of scales, studies of learning versus maturation, and the development of social behavior and personality. Gesell contributes a chapter on "The Study and Guidance of Infant Behavior" in which he describes the moving picture technique for studying the behavior of infants in controlled situations. Experiments on twins are likewise cited. Individual differences are stressed.

Gates has an interesting chapter on psychology and education which is one of the best brief summaries in this field which the reviewer has seen. Investigation of methods of reading led to the modern method of teaching reading by words rather than by letters. Difficulties in basal skills, such as reading may be diagnosed and remedied. The same applies to personality difficulties. Curricula have been revised in the light of the negative findings regarding formal discipline. Teaching methods have been improved, for example, by the use of the project method. Adult education seems to be a desirable venture in the light of the results of learning experiments upon adults. The chapter is replete with illustrative cases.

May's chapter on "The Foundations of Personality" is "heavier" than most of the others but it is lightened by a sense of humor. After some discussion the author hazards a commendable definition of personality as "that total organization of reaction tendencies, habit patterns and physical qualities which determine the individual's social effectiveness." He calls the roll of the various theorists regarding personality—the endocrinologist, the psychoanalyst, those who stress instinct, reflexes, and environment, home or other specific situations and cultural background (phylo-genetic). His general conclusion is that all are partially right and none wholly so. All the resources of the biological and social sciences will contribute to the ultimate description of differences in personality.

Miles discusses "Psychology and the

Professions, Medicine, Law and Theology." Regarding the first, he notes psychology's contribution to case history, to interpreting the patient's own statements and to actually handling the patient. Medicine is concerned with human beings rather than with diseases. In the legal field there is mention of the contribution of the insane, feebleminded, drug addicts and unfavorable environmental conditions to the criminal problem. Deception tests, such as the association reaction, and blood pressure measurements are briefly discussed. In the theological field the value of a religious philosophy in personality adjustment is stressed.

Viteles' discussion of psychology in industry is the chapter which will probably be of greatest interest to personnel people. It is likewise one of the most comprehensive and thorough chapters in the volume. Initial stress is laid on the problems of vocational adjustment of the individual and the selection of employees on the basis of individual differences. Results, such as decrease of accidents, are cited and illustrated by charts. The author draws on his own experience in selecting motormen. He places considerable emphasis on the clinical point of view, stating that objective tests do not tell the whole story, that we need to interview the applicant and sometimes consider the shape of the curve obtained from the data. Some readers may object to this degree of emphasis on the clinical viewpoint, although the reviewer does not. This controversy between the clinical and the purely statistical points of view is not new to Viteles. In training employees we may utilize our general information regarding the practice curves if we study individual work curves. Habit interference should be avoided, as for example, when a motorman is learning with a different instructor each day. Monotony reveals itself in drops in production near the middle of the working spell and by variability of production. Individuals differ in their susceptibility with some indications that those of low intelligence are less susceptible. Variety in the work itself will help, for example, by changing periodically the work or the methods. He refers again at the end to the problem of individual adjustment and the clinical viewpoint. He also cites a few typical cases from accident clinics. This particular chapter affords an excellent and readable summary of this field. It contains considerable graphic and illustrative material. The footnotes are well chosen and there is considerable reference to the German literature on the subject which we do not find mentioned so frequently in American publications.

Allport discusses psychology in relation to social and political problems. There is a commendable emphasis on experimental approach to such problems. Character traits as they have been studied thus far seem to apply to specific situations, rather than being very general. Group opinion does not seem to improve much by discussion of the issue but individuals in the group do become more nearly correct in their own opinion. Conformity of the individual to institutional factors is studied by observing such things as automobile traffic. At intersections with no traffic control the tendency to slow down and stop or to keep on seems to follow a somewhat normal distribution, whereas with stop signs it becomes more nearly J-shaped and with traffic lights still more so. The distribution curve for length of parking time also follows a J-type distribution. Distribution curves for belief in existence or nature of the deity show interesting divergencies with different religious groups in their tendency to conform to an institutional pattern. Another angle is the difference between public and private belief in a rural community regarding such things as card playing or type of baptism. The author suggests the possibility of obtaining some sort of index of institutionalization by noting whether the behavior of the group follows a normal frequency distribution or is more definitely J-shaped. Allport hints at the social implications of the fact that most human capacities are distributed normally while with social institutions we are attempting to make them J-shaped.

The book does not have, of course, the continuity which would prevail in a book by a single author. On the other hand, it

has the merit of presenting the views of persons who have specialized somewhat in the fields which they discuss and about which they probably know more than a single writer who attempted to cover the entire field would know. The book is within the range of the average intelligent reader and gives an interesting yet conservative presentation of the main contacts of psychology with practical problems.

APPLIED PERSONNEL ADMINISTRATION

By J. E. Walters. New York: Wiley, 1931, 338 pp., $3.00

Reviewed by ORDWAY TEAD, *Harper and Brothers*

In this volume, the emphasis is explicitly upon applications of personnel work which are currently being made. Within these limits, the book is, on the whole, a graphic and interesting statement of representative procedures in the various phases of personnel activity. The experience which is recited and the literature referred to reflect procedures and methods, most of which are contemporary and tested.

The chief limitation upon this book's value is perhaps its failure to convey any larger executive approach to the problem in point of the relative importance and emphasis which should be placed upon different kinds of personnel work. Since the point of view from which personnel work is developed, and the fundamental policy of the company operating it, are both crucial points in the ultimate effectiveness of personnel work, it is unfortunate that the author did not see fit to set his volume in a somewhat larger philosophical, psychological, and economic background. Also, as is all too common in books on this subject, the whole problem of the relation of employees and of labor unions to the control of all matters of personnel relations seems unduly slighted.

It seems to this reviewer that it cannot be said too often that personnel work is only secondarily a matter of techniques and is primarily a matter of the understanding which those in positions of management and ownership have of the motives and desires which will induce people to work harmoniously and effectively. With this knowledge and understanding the experimental development of varied procedures can then go forward significantly. Without it the procedures are hollow and likely to result in disappointment if not futility, so far as employee response is concerned.

Nevertheless, as a record of procedures, the book supplies eloquent testimony to the fact that personnel work as such has arrived at a point of reasonably standardized content and procedure which are now accepted as of essential and integral value in all types of institutional and managerial relationships.

HANDBOOK OF BUSINESS ADMINISTRATION

By W. J. Donald, Editor-in-Chief; Leona Powell, Managing Editor. New York: McGraw-Hill, 1931, lvii + 1753 pp., $7.00

Reviewed by O. R. JOHNSON, *Trade-Ways, Inc.*

A trend toward specialization in business has been evident for some time. We have sales, production, accounting, advertising, marketing, purchasing, and personnel specialists in great numbers—everything, in fact, except a sufficient number of men who can operate a business at a profit.

The "Handbook of Business Administration" is a timely reminder that in business, management is *the* profession; that these specializations which have grown up so rapidly in recent years are only parts of a whole, and can function effectively only when their activities are properly co-

ordinated—and subordinated—by individuals who see the whole business clearly.

Indeed, the organization of the Handbook itself does less than it could to emphasize this idea, in that it is chronological rather than organic. That is, it takes for granted the existence of a business organization and plunges directly into a discussion of the problems of marketing. This is all right, of course; and the Editors doubtless had their own good reasons for doing so. Yet it seems to this reviewer that a better perspective and a greater unity would have been obtained by opening with the section on General Management and there defining and relating the major problems of the management under the five heads which sub-divide the remainder of the book.

All this is unimportant, however, in comparison with the fact that this Handbook contains an extremely valuable collection of papers on probably every problem of business management. For factual material and authoritative discussion of business problems it is the equivalent of half a dozen or more average-sized business books.

The Handbook is divided into the following six main sections: Marketing, Financial Management, Production Management, Office Management, Personnel Management and General Management. To get some measure of the relative importance of each of these subjects in the eyes of the Editors, the reviewer calculated the percentage contributed to the book by each of these sections. These percentages are respectively: 19, 12, 12, 17, 25, 15 per cent.

The list of contributors is an imposing one. It includes a host of men well-known, not merely for their writing ability, but their demonstrated capacity to do the things about which they write. It would be unfair to mention a few and not all. And since the list of contributors is too long (there are 129 names on it) to print here in its entirety, no names will be mentioned.

This Handbook should be in every personnel man's library, for two reasons. In the first place, it will serve as a valuable guide to his operations in the field of his own specialty. It will inform him of the uses and values of personnel methods; and it will help him to check the completeness of his own operations by providing a well-rounded picture of personnel work as a whole. In the second place, it is a valuable reference book from which he can pick up a great many facts about the other major departments of the business. It should help to give a better perspective on his own work by making him conscious of his fellow-workers' problems and viewpoints. The value of this Handbook to personnel workers is emphasized solely because this is a review for *The Personnel Journal*. The fact is that this book is equally valuable to all business executives; and for exactly the same reasons.

SERVICE RATINGS

By J. B. Probst. Technical Bulletin No. 4, Bureau of Public Personnel Administration, University of Chicago, 1931, 94 pp., $3.60

Reviewed by R. O. Beckman, *Scott Stores, Inc.*

Service reports, unfortunately usually termed efficiency ratings, have in the past been generally conceded to measure neither success on the job nor much of anything else. Progress has been made, it is true, in developing of self-rating scales and teacher-rating scales, and substantial claims have been set forth for graphic rating plans. One of the most vital of personnel problems has remained relatively unsolved.

In view of this unsatisfactory situation the recent publication by the Bureau of Public Personnel Administration of an exhaustive study of the Probst service rating plan is more than significant. It is a little volume filled with substantial facts rather than propaganda or theory. Its import is summarized in the introduction by Fred Telford as follows: "The evidence that the service rating system evolved by

Mr. Probst, with the cooperation of personnel administrators, constitutes such a valid and reliable measuring instrument, as presented in this book, cannot be disregarded by intelligent personnel administrators. . . . . In some 10,000 cases involving, it would seem, almost every possible combination of circumstances and most of the common occupations other than salesmen, Mr. Probst has been able, from reports which supervising officers are able to supply without great difficulty, to appraise more accurately than the supervisors themselves the character of the performance of the employees supervised."

As personnel officer of the City of St. Paul, Mr. Probst has experimented for fifteen years with every known type of service rating, at length discarding them all. A few years ago he began experimenting with a new type of rating scale which has now been perfected. During the past two years it has been tested and checked in public and private organizations, a thoroughgoing study being made possible through a grant by the Spelman Fund of New York.

Preliminary chapters discuss the various types of service rating plans and their shortcomings. It is pointed out that the Probst plan has attempted to eliminate particularly the following defects: (a) "halo"; (b) adjustments of ratings to harmonize high and low raters; (c) inconsistency between reports made at different times by the same person; (d) need for judging the various employees as to their relative excellence in each trait (or quality); (e) need for special training of the reporting officer; (f) judgment ratings that allow little chance for review. Requirements of a satisfactory system have been held to include: the reporting of performance not in general subjective terms or conclusions but in statements of fact or verifiable judgments; ratings in terms of everyday thinking of reporting officers and not in letters or percentages; optional selection of rating items to restrict ratings to factors with which the rating officer is conversant; a method by which rating officers will be forced to rate accurately or be shown by "internal evidence" not to have done so; and simplicity sufficient for the average employee to determine for himself the fairness and reliability of the distribution of ratings. The statistical evidence presented in later chapters seems to suggest that the defects have been largely eliminated and the requirements amply met.

The Probst form is of letter size printed on two sides. At first glimpse the reverse side appears to be a complicated and rather jumbled dictionary of phrases descriptive of character traits. Acquaintance, however, shows the plan to be very simple, in so far as the rater is concerned. The form is checked by one, two, or preferably three supervisors familiar with the employee's work; check marks are all that are required and the form can be filled in a few minutes. The scoring is quickly done by a junior clerk, usually with the aid of an automatic device, use of which can be learned in half an hour. Final ratings are expressed in eleven steps ranging from minus E to plus A. One side of the form provides instructions and ratings on absence and tardiness; the other side lists for possible checking nearly 100 different trait-phrases descriptive of work conduct and attitude. Typical of these phrases are: "Slow moving, talks too much, might be more orderly, hardly ever makes a mistake, generally looks for the easy work, sometimes goes on a 'tear'." These expressions have been chosen after extensive experimentation and selection from more than 400 different items, it is stated, and only after consideration of the statistical and psychological factors involved.

Probst forms have been devised for any type of employment except selling and merchandising vocations. A slightly different form is used for employees in private industry from those in public employment. A third form is devised for use with teachers. The public service form has been used on thousands of workers in such diverse lines as janitors, clerks, laborers, and executives; the scoring plan makes it possible to compare the ratings of employees within the same class of employment. Used to rate factory workers, the form for industry would appear to be a valuable supplement to production records.

The word "supplement" is used advisedly since the author in a chapter on production records seems to imply that his rating plan is more significant than production or sales records in obtaining an all around picture of the worker's services.

The volume contains many figures and tables, there being 21 of the former and 24 of the latter. These seem to prove that the Probst plan has high reliability—successive ratings of the same employees producing correlations of from .60 to .91. On the score of validity, coefficients range from .31 to .83, based on a comparison of Probst ratings versus supervisor judgment ratings, presumably of the rank order type. However, this claim to validity is discounted in the mind of the reader by definite proof that "Human judgment is erratic and quite unreliable:" elsewhere it is made the basis of a claim to validity. Other types of criteria, more objective than individual judgments, are of course very difficult to obtain, and are in many cases impossible. The volume is also weakened by the presentation of a scatter diagram showing the unreliability of one of the graphic rating scales. The scale in question could not have been of superior type and produce such sad results. The reliability of graphic ratings is of course notoriously low. The only real evidence of any graphic rating plan having this necessary virtue is set forth in the Mathewson revision of Scott and Clothier's "Personnel Management," and there it appears to be restricted to experience with one group of workers.

Despite minor criticisms, the Probst plan as set forth in this study appears to be a most hopeful and reliable means of measuring relative differences in employee capacity. Built up in the course of an undeniably painstaking process of fact finding, it bears evidence of being statistically sound and substantially more valid than its many theoretical predecessors.

THE LABOR PROBLEM IN THE UNITED STATES

By E. E. Cummins. New York: Van Nostrand, 1932, xiii + 857 pp., $3.75

Reviewed by EDWARD S. COWDRICK, *New York*

A few years ago it was fashionable to talk about labor relationships in terms of complete mutuality, and to ignore the areas in which the interests of employers and employees are competitive when not actually antagonistic. Professor Cummins swings far to the other side of the road. To him the field of labor is a scene of conflict; conflict fundamental, inevitable, and —as he intimates in his final chapter— probably unending.

He makes his viewpoint clear on the very first page of his book. "Primitive man," he says, "grappled with nature. . . . . The wage earner of modern times finds blocking his path not nature but the employer . . . .; and perceiving that to improve his technique of production will not aid him greatly in that fight, brings his ingenuity and energy to bear primarily upon the task of improving, not his technique of production, but his technique of grappling with the employer."

Throughout the book this philosophy of conflict is kept prominent. It is perhaps characteristic that the subject of personnel management is treated in a chapter that bears the title "Meeting the Wage-Earner's Grievances."

In his chapters of "Conclusions," Professor Cummins seems partially to acquit laborers and employers of responsibility for the clash of interests which he finds inevitable, and to lay the blame upon the "money motive" in our present economic and social system.

"Whatever it touches, whether it be unionism, employers, producers, artists, colleges, or nations, the money motive leaves the taint of graft, dishonesty, bad faith, violence, murder, and death. . . . .

"Trade unionism is based upon selfishness, not upon altruism; and if we are to accept the verdict of history, this must necessarily be so throughout the lifetime of the present economic system. I think

it safe to say that in every recorded struggle between a labor organization dominated by selfishness and a labor organization dominated by altruism the former has won and won decisively."

The employer, too, is helpless under the sway of the "money motive."

"Uppermost in his mind is the protection of profits. As long as our economic society is so organized that the money motive controls, just so long will the protection of profits continue to be uppermost in his mind, just so long *must* it be. . . . . Again it is the money motive which must bear the heaviest burden of guilt. . . . . It must always be remembered that the employer (like the employee) is not a free agent. The most that he can do is to make the conditions of the struggle less harsh, its effects upon the laborers less devastating. The conflict itself goes on because its fundamental cause remains."

Professor Cummins' workmanship is better than his philosophy. Like the ancient astronomers who could predict eclipses accurately although they believed the sun revolved around the earth, he has been able, starting from a premise which many still consider incomplete if not actually fallacious, to construct a book which is in many respects excellent, in some respects distinguished. The factual material is ample, and gives evidence of ripe scholarship and indefatigable research. The literary style is clear, easy and animated; in the more than 800 pages there is scarcely a dull paragraph. The book is a significant addition to the literature of labor relationships.

THE MEASUREMENT OF INTERESTS IN RELATION TO HUMAN ADJUSTMENT

By Douglas Fryer. New York: Holt, 1931, xxxvi + 488 pp., $4.50

Reviewed by PAUL S. ACHILLES, *Psychological Corporation*

Define it or not, the psychologists will attempt to measure it, for they labor under the challenging dictum that whatever exists must exist in some amount and can be measured. The "it" of this book is indeed difficult. Whether or not you agree as to the success either of definition or measurement, you will find here, well assembled and annotated, practically all of the attempts and methods that have appeared in the last decade. Fryer has set a fine example for the sort of periodic surveys and evaluations needed to preserve the efforts of the past for the benefit of research workers of the future, as well as to make available for present use what is now valuable.

He points out in his preface that the importance of interest measurement lies in its possible contribution to *happier* social adjustment of individuals. Successful accomplishment based on ability has hitherto been stressed at the expense of possibly happier accomplishment based on interest. It is quite conceivable, and well worth the consideration of vocational counselors, that an individual may be happier failing or accomplishing little in something in which he is really interested than succeeding, to outward appearances at least, in a job in which he is not interested.

The first seven chapters of the book deal with what Fryer terms subjective interests, and the next two with what he calls objective interests. This terminology is based on differences in the devices thus far developed to measure interests, rather than on actually ascertained differences in the phenomena. The subjective devices directly ask the individual to indicate whether he likes,dislikes, or is indifferent toward various items in a questionnaire representing occupations, school subjects, sports, activities, and so forth. In other words, they call for an introspective or subjective report, and hence the results therefrom Fryer calls measures of subjective interests. The objective devices, on the other hand, seek to secure some measurable evidence of interests other than the subject's mere

say-so. The fact that seven chapters are required for the subjective and only two for the objective devices is significant of the relative progress thus far achieved by these two approaches.

In Chapter X Fryer summarizes the present status of measurement methods in this field, and compares it to a similar earlier stage in the measurement of abilities. He says that while the measurement of abilities had achieved an objective basis by 1908, the objective measurement of interests is still largely in the experimental stage. It is only in the subjective measurement of interests that any well defined technique has been worked out. It may be, however, that another decade of research will establish for the field of interests an objective measure, and if so, says Fryer, "the subjective measures will, of course, go into the discard unless they contribute something additional to the measure. Abilities have always been predominantly objective in their definition, even prior to their measurement, while the early conceptions of interests are all subjective. In the field of interests there is also the additional problem of finding out exactly what are objective interests, or what is the objective aspect of what are known as subjective interests, so that the measurement of interests may become an objective problem."

In so far as the reviewer can disentangle the "aspects," Fryer proposes in his own "acceptance-rejection theory" of interests that a distinction be made between five different aspects of the measurement of human reactions as follows:

1. *The Abilities*, a measure of the efficiency aspect of reaction.
2. *The Interests*, a measure of acceptance-rejection aspects. Included here are the inventories of vocational, educational, social, and intellectual interests, and the objective tests which are being used to indicate the interests of the individual. These scales aim to distinguish the interest aspect of the reaction from all others, particularly from measures of ability.
3. *Motivation*, a measure of the drive, the urge, the persistence aspect of the reaction. There are no tests which can be said to measure motivation.
4. *The Emotions*, a measure of stability, of the abortive and inhibitive aspects of the reaction.
5. *General Habits*, a measure of the habitual aspects of the reaction.

Fryer feels that the major contribution of his theory lies in its definition of *interests* and *motivation* as separate in mental life, i.e., "there is the driving energy of stimulation (motivation), and there is the acceptance or rejection aspect of the reaction (interest)." The parenthetical words are inserted by the reviewer.

Fryer then proceeds to point out the dual approach to any one of the above five aspects of reactions, that is, the subjective or self-estimate approach (including here ratings by others), and the objective approach in which the estimate by the person being tested or by others is not considered. He follows this with a valuable discussion of the established principles of mental measurement in relation to their application to interest measurement.

Aside from the reader's interest in the theory and principles, whether acceptance or rejection, he will find the book very useful as a reference on almost any problem pertaining to interests. If a researcher, it will save him much time in reviewing previous work and finding source materials. If a practical counselor, confronted with immediate problems regarding the use and interpretation of available devices, he will find much help. Chapters XI and XII are devoted respectively to The Individual's Interests, and The Clinical Examination of Interests. The Appendix gives a good Historical Sketch of Interest in Education and Industry which might well be read first by those more interested in a general survey of the field than its research problems. The Appendix also contains scoring keys not readily available elsewhere, for Hubbard's Interest Analysis Blank for boys (mechanical abilities) and the third Minnesota Scoring Key for Educational Abilities (for Men and Women). It includes also a section on the Manson "Occupational Interest Blank for Women" which appeared too late for inclusion in the text.

It is to be regretted that the Vocational Interest Quotient Booklets devised by H. W. Hepner and published in July, 1931, by the Psychological Corporation, as well as revised and improved forms of P. P. Brainard's Specific Interest Inventories (Form B for boys and Form M for men) published in January, 1932, by the Psychological Corporation, were both too late for the author's consideration in this book. Both are helpful contributions to further progress in research in this field as well as to present practical vocational guidance.

For comparative reading along with this commendable book of Fryer's the reviewer suggests Symonds' *Diagnosing Personality and Conduct*. The two are alike in surveying and evaluating the research work in these difficult fields, and supplement each other nicely.

Briefer Mention

DISTRIBUTED LEISURE. By L. C. Walker. New York: Century, 1931, 246 pp., $2.25.

The author, a business man, evaluates the industrial system which he helped to create. After a summary account of the earlier generations of capitalism, he comes to the period of the "Second Industrial Revolution" which occurred some time after 1900, and which was characterized by increased output, high aggregate profits, wage rates and living standards. This new order was ushered in by the pioneer philosophy of the economist, Francis A. Walker, who argued that greater production would benefit both capital and labor; and by the pioneer practice of Frederick W. Taylor, who soon replaced fear and hostility between boss and men by a desire to collaborate for their common advantage. Scientific management, the incentive wage, power from electricity and the internal combustion engine, and capital funds at low interest rates,—a desideratum promoted by the Federal Reserve system—were the chief factors contributing to this revolution of industry.

Better technical equipment and processes resulting in mass production, mass distribution, and mass consumption normally at a high level, result also in a normally lessened demand for labor, and in times of depression, mass unemployment. With modern division of labor and specialized functions, it is impossible to lay off a part of the force without destroying "balanced production," and so increasing labor costs. "The philosophy of distributed leisure is based on the conception that the modern factory . . . . does its best work when run to capacity, and that in hard times it will produce at lower cost if it is run with a full force for the number of days each week required to fill its orders and is then shut down tight with all wages and *all control-office salaries stopped*" (p. 153). "American executives must abandon some traditions if they would assist in eradicating the black blot of mass unemployment and the fear that goes with it" (p. 188). "Unemployment without fear becomes leisure" (p. 197). The present industrial régime produces both goods and leisure; whether it works full time or part time, "*it should work for all of us, not for just a special lucky group*" (p. 225). The author's argument is a challenge to every employer who regards his business as a part of an integrated social order.

MUNICIPAL SELF-INSURANCE OF WORKMEN'S COMPENSATION. By F. Robert Buechner. Chicago: University of Chicago Press, 1931, xv + 72 pp., $1.50.

In this work a city manager seeks to know whether a municipality can "afford to carry its own compensation insurance." Cities known to be self-insuring (a partial list is presented, pp. 11–12) present wide diversities in practice. Eight case studies of smaller cities (population range from 5,000 to 41,000) are offered as types of varying compensation-insurance practices. Self-insurance results in pronounced savings. Some may regard data on these few cities as an inadequate basis for the author's guarded conclusion that "self-insurance is advisable under certain fundamental conditions."

THE STABILIZATION OF EMPLOYMENT IN PHILADELPHIA THROUGH THE LONG RANGE PLANNING OF MUNICIPAL IMPROVEMENT PROJECTS. By William N. Loucks. Philadelphia: Univ. of Pennsylvania Press, 1931, xix + 341 pp., $3.50.

The author of this work examines the Philadelphia expenditures for municipal improvements, 1919–1928, and surveys contemplated future improvements; he analyzes procedure necessary for authorizing and financing such projects. He finds that the past program was carried through with little regard to the possibilities of long range planning; and that while there is no lack of contemplated future improvements, the time required in legally launching these projects—three months to a year or more—prevents their full utilization as stabilizing forces. The author believes however that about one-half of such projects might be shifted from prosperous to depressed years, and that about one-half of the expenditure so adjusted would be paid in wages. He concludes that 10 to 15 per cent of the city's unemployed in any year might be absorbed by long range planning of public works. Abundant statistical data are included.

This work "has the greater significance because it concretely attacks the problem in one of the local units of government" (Foreword, page XIX). Its general conclusions are probably applicable to other large cities.

NEW ROADS TO PROSPERITY: THE CRISIS AND SOME WAYS OUT. By Paul M. Mazur. New York: Viking, 1931, xiv + 194 pp., $2.00.

The failures of American capitalism, their causes and possible remedies, are the themes of this book. Business, following "Antiquated principles," has found disaster. "New ideas . . . .hold promise"and should be examined without prejudice. After discussing the causes of capitalism's most recent failure (chapters I–V), and describing the disaster (chapters VI–VII), the author examines some of the "new ideas:" Economic planning on a national scale; improvements in international banking practices, and in domestic banking particularly by the inclusion of "consumer financing;" a new dividend policy (pp. 173–74); the five day week; etc.

The reviewer regrets that a banker-author who has the literary skill to turn the understanding of economics into a pleasant recreation for his fellow business men, should have such an imperfect conception, and such an exaggerated notion of the ills, of what he is pleased to call the dole.

WORLD ECONOMIC DEPRESSION: REMEDIES. By Srinivas Ram Wagel. New York: Hill, 1931, 152 pp., $2.50.

This is an ambitious book, as its title suggests. The author believes that future economic health depends on international economic co-operation. "National activities must be regulated to suit not only internal needs, but the needs and wishes of other peoples of the world; for peoples are so dependent on each other that they can not ignore each others' well being." (Preface page 6). The work examines in turn trade, production, money, credit, and employment practices; it points out defects in present systems and suggests improvements. But the argument hardly lives up to the promise of the preface: compare for example *Tariffs and Debts*, page 30 et seq.; *Consumer Control*, page 49 et seq.; the discussion of silver, etc., page 98 *et seq.;* or the statement: "the fact a large part of such tax payments . . . . is passed on to the consumer is only incidental," page 149. But the author's first sentence, (Preface, p. 5) is a modest disclaimer of finality.

THE COURSE AND PHASES OF THE WORLD ECONOMIC DEPRESSION: REPORT PRESENTED TO THE ASSEMBLY OF THE LEAGUE OF NATIONS. Boston: World Peace Foundation, revised edition, 1931, 355 pp., $3.00.

This work calls attention to surplus producing capacity, surplus stocks of goods, hampered international trade, erratic price movements and political instability, all of which weakened the economic constitution of the post-war world, so that the ravages of depression have been the more serious. In such a world-wide crisis, national remedies and preventives are largely futile. The trouble can be di-

agnosed, and its recurrence averted, if at all, only by co-operative collection and interchange of facts among the nations, and by concerted action based on the wider understanding so obtained. Experts of many nations here pool their information which other experts interpret. Post-war changes in production, demand, and finance, as manifested in major economic fields, are presented in the earlier chapters; then follow a description and analysis of the present depression to September 1931. An appendix gives pertinent comparative data as to world production, trade, capital issues, etc. Business men, public officials, students—all who direct economic policies and opinions, may become wiser leaders through mastery of this book.

EDUCATION ON THE AIR. Edited by Josephine H. MacLatchy. Columbus: Ohio State University, 1931, 301 pp., $3.00.

This volume consists of addresses given during the Second Institute for Education by Radio, conducted by the Research Department of the College of Education at Ohio State University.

In the foreword it is stated that "Education by radio has come to be more than an experiment. Educators are now interested in its place in the educational program, and in the best ways to develop its possibilities. . . . . It is well, therefore, that we again take stock of our advancement and by so doing be ready to recommend worthwhile procedures." Many perplexing questions about educational broadcasting are taken up by the various speakers, and the discussions of each address are illuminating.

A wide range of topics in the field is covered in the seven sections of the volume, including National Aspects of Education by Radio, Organization of Radio Education, Activities of College Stations, Radio in the Schoolroom, Technical Aspects of Radio, Investigation in Radio Education, and Presenting Chain Programs.

LEGAL PSYCHOLOGY. By H. E. Burtt. New York: Prentice-Hall, 1931, xiv + 467 pp., $6.00.

Attempting to apply psychological principles and experimental findings to the law, this large volume is of service to the lawyer and to the applied psychologist. It might well be used as a text in law school courses for students with or without previous training in psychology.

Sensation and perception are taken up for their bearing on error in testimony. The psychology of memory is very much in point because of the considerable time elapsing between observation and actual testimony. Suggestion is studied with special regard to the part played by the wording of questions in cross examination. Several chapters are devoted to the objective methods of crime detection—association reaction, respiratory, and blood pressure methods. A number of chapters are given over to consideration of the different kinds of criminals, and then a number to problems of crime prevention.

While there is undoubtedly room for criticism, especially from the lawyer's viewpoint, this book starts to fill a very empty portion of the psychological bookshelf.

A STUDY OF VALUES: A SCALE FOR MEASURING THE DOMINANT INTERESTS IN PERSONALITY. By F. H. Allport and L. N. Vernon. Boston: Houghton Mifflin, 1931, $1.80 (package of 25 and Manual of Directions).

This is a test designed to measure the relative prominence of six basic interests or motives in personality: the 'theoretical,' 'economic,' 'aesthetic,' 'social,' 'political,' and 'religious'—a classification taken from Spranger's *Types of Men*. The scale consists of a number of questions, based upon a variety of familiar situations, to which alternative answers are provided. The six total scores are plotted on a profile, so that one may see the significance of his standing on all the values simultaneously.

Although norms for different occupations are not available, the test may be useful to the vocational counselor in getting an initial impression of the interests of his client. In this connection it is interesting to note that Thurstone through multiple factor analysis has indicated that four general factors underly occupational interests as measured by the Strong Vocational Interest Blank.

CLINICAL PSYCHOLOGY: STUDIES IN HONOR OF LIGHTNER WITMER, TO COMMEMORATE THE THIRTY-FIFTH ANNIVERSARY OF THE FOUNDING OF THE FIRST PSYCHOLOGICAL CLINIC. Edited by R. A. Brotemarkle. Philadelphia: Univ. of Pennsylvania Press, 1931, xxi + 409 pp., $3.50.

This volume is interesting both from a historical and a scientific point of view. The first part is devoted to a biographical sketch of Witmer, and the history of clinical psychology which he founded and motivated. The second part is devoted to the primary problems of clinical psychology, the articles having been contributed by colleagues and former students at the University of Pennsylvania. Part Three contains reprints of three important articles by Lightner Witmer.

THE PSYCHOLOGY OF ADVERTISING. By Walter Dill Scott; revised by D. T. Howard. New York: Dodd, Mead, 1931, xi + 300 pp., $3.50.

After ten years Scott's *Psychology of Advertising* has again been revised, not, however, by the original author, but by D. T. Howard, who is Professor of Psychology in the university of which Scott is now president. While as much as possible of the original text has been preserved, many changes have been made. A great deal of material has been eliminated as out of date, and four new chapters have been added. Illustrations and terminology have been brought up to date.

The emphasis of the book is on psychology, advertising being merely one of the fields to which the findings and laws of the science may be applied. This does not mean, however, that the book is over-theoretical or that it will not be of great value to advertisers. No psychological point is made without illustration of its practical significance.

PERSONALITY AND WILL. By Francis Aveling. New York: Appleton, 1931, 256 pp., $2.00.

This book is a unit of Appleton's Contemporary Library of Psychology, which has the purpose of presenting modern psychology in a popular way, without loss of scientific accuracy.

The general purpose is to investigate the nature of will and personality, as defined by the author. A historical account of the subject is given, from the prescientific period, through times of transition, down to present-day experimental investigations. There is a good deal of theoretical discussion, based to be sure on experimental data, of instinct, sentiment and values, temperament, the self, and determinism. The final chapter, on The Nature of Personality, is outstanding for the way in which it brings the loose threads together and gives an integrated picture of the subject.

CHILD PSYCHOLOGY. By J. J. B. Morgan. New York: Richard Smith, 1931, 475 pp., $3.50.

This book, presenting the latest findings in the field of child psychology, should be of particular interest to students of child psychology, parents, and child study groups. Morgan has aimed to place his material in a systematic form, and to use the simplest scientific terms. The normal child has been the base of his study. He begins with infant behavior, and the child's adjustment to the family. Then we learn the importance of motor and emotional development. This is followed by motivation, development of memory, imagination, language, value of play, and similar topics which relate to the social development of the child. The chapter on intelligence gives a good outline of various mental tests suitable for gauging intelligence. It is emphasized throughout the book that childhood is the preparatory period of life, and that parents and teachers should aim to train each child for complete living.

PSYCHOPATHOLOGY: ITS DEVELOPMENT AND ITS PLACE IN MEDICINE. Revised Edition. By Bernard Hart. New York: Macmillan, 1931, 178 pp., $2.75.

A number of lectures by the eminent British psychopathologist, Bernard Hart, go to make up this book. They describe the development of psychopathology, and critically review the chief tenets held by the

various present-day schools of thought. There are additional papers on The Psychology of Rumor, The Methods of Psychotherapy, and The Conception of Dissociation. The book is written with the authority and style that made the author's *Psychology of Insanity* an outstanding treatise in the field.

SPEECH PATHOLOGY. By Lee Edward Travis. New York: Appleton, 1931, xxxiv + 331 pp., $4.00.

This is not a manual of help to be put in the hands of sufferers from speech disorders, but a scientific treatise for serious students of the subject of speech pathology. Research findings from the fields of education, psychology, psychiatry, and neurology are brought together, integrated, and interpreted. As the book is rather technical in parts, the glossary of terms is a welcome addition.

A discussion of the neuromuscular basis of speech introduces the reader to the subject. Following a classification of speech disorders, the general causes of speech disorders and general examination methods are enumerated and discussed. A one hundred page chapter is devoted to stuttering, a subject to which Travis has devoted a great deal of his own research energy. Other classes of disorder are taken up somewhat less fully.

AN EXPERIMENTAL MANUAL IN PSYCHOLOGY. By John Frederick Dashiell. New York: Houghton Mifflin, 1931, x + 161 pp., $1.90.

"Psychology, long considered dependent for her factual material upon the empirical procedures of natural science, is becoming increasingly recognized as a branch of human knowledge that must also be *taught* in a natural science spirit," says the preface. Recognizing this fact, the author has organized a usable manual to be followed in conducting an experimental psychology course. While the manual is primarily intended for introductory courses, it is adaptable to more advanced students.

The range of experiments set up is wide, so that where one piece of apparatus is not available, another may be used.

For each experiment the necessary materials are described, usually with illustrations. Procedure is clearly outlined, directions are given for working up results, and there are questions for discussion.

WHAT PEOPLE WANT TO READ ABOUT. By Douglas Waples and Ralph W. Tyler. Chicago: Univ. of Chicago Press, 1931, xxx + 312 pp., $3.50.

This volume is of particular interest to three groups: (a) librarians, teachers; (2) students of sociology, education, and other fields, who wish to study the data in greater detail; (3) research students in the field of reading. The authors first developed a method by which the reading interests of various adult groups might be measured; then these methods were applied to more than 160 groups of diverse character—housewives, farmers, teachers, tradesmen, etc. Development of this technique is a real contribution to intelligent adult education.

THE ART OF LEARNING. By Walter B. PITKIN. New York: McGraw-Hill, 1931, xiv + 409 pp., $2.50.

Pointing out that learning is one of the most important, yet one of the most neglected of the "arts," the author devotes himself to the task of helping adults learn how to learn.

With his easy, interesting, perhaps journalistic style, Pitkin goes at his job of making people want to learn and to improve themselves, while telling them how to do so. The dull findings of psychologists are dressed up and presented in stimulating fashion. A great deal of space is given over to exercises which will aid the serious reader to gain proficiency in the "art of learning."

New Books

LABOR RELATIONS

A STRIKELESS INDUSTRY: A REVIEW OF THE NATIONAL COUNCIL ON INDUSTRIAL RELATIONS FOR THE ELECTRICAL CONSTRUCTION INDUSTRY. New York: Day, 1932, 29 pp., $.25.

HOW WORKERS FIND JOBS: A STUDY OF FOUR THOUSAND HOSIERY WORKERS IN PHILADELPHIA. By Dorothea de Schweinitz. Philadelphia: Univ. of Pennsylvania Press, 1932, 215 pp., $2.50.

UNEMPLOYMENT, A PROBLEM OF INSECURITY. By William Haber. New York: Affiliated Summer Schools for Women Workers in Industry, 1931, 88 pp., apply.

UNEMPLOYMENT INSURANCE IN WISCONSIN. By Roger Sherman Hoar. Milwaukee: Stuart Press, 1932, 112 pp., $2.16.

INDUSTRIAL EDUCATION

READINGS IN VOCATIONAL EDUCATION: TRADE AND INDUSTRIAL ASPECT. Compiled by Nicholas Ricciardi and Ira W. Kirby. New York: Century, 1932, 581 pp., $3.00.

MANAGEMENT AND ADMINISTRATION

A TEXTBOOK OF OFFICE MANAGEMENT. By William H. Leffingwell. New York: McGraw-Hill, 1932, 190 pp., $3.00.

HUMAN ENGINEERING. By Harry Myers. New York: Harper, 1932, 326 pp., $3.00.

PROFITABLE PRACTICE IN INDUSTRIAL RESEARCH: TESTED PRINCIPLES OF RESEARCH ORGANIZATION, ADMINISTRATION, AND OPERATION. Edited by Malcolm Ross and others. New York: Harper, 1932, 281 pp., $4.00.

GUIDANCE

JOBS FOR THE COLLEGE GRADUATE IN SCIENCE. By Edward J. v. K. Menge. Milwaukee: Bruce, 1932, 183 pp., $2.00.

THE CHOICE OF AN OCCUPATION. By A. B. Crawford and S. H. Clement. New Haven: Department of Personnel Study, Yale University, 1932, 495 pp.

VOCATIONAL GUIDANCE. White House Conference on Child Health and Protection publication. New York: Century, 1932, 419 pp., $3.00.

WHAT KIND OF COLLEGE IS BEST? By Myron M. Stearns. New York: Day, 1932, 78 pp., $1.25.

VOCATIONAL INFORMATION

ETHICS AND PRACTICES IN JOURNALISM. By Albert F. Henning. New York: Long and Smith, 1932, 212 pp., $1.50.

PSYCHOLOGY

CHILDREN WHO CANNOT READ. By Marion Monroe. Chicago: Univ. of Chicago Press, 1932, 221 pp., $2.50.

DIAGNOSING PERSONALITY AND CONDUCT. By Percival M. Symonds. New York: Century, 1931, 618 pp., $4.00.

FOUNDATIONS OF ABNORMAL PSYCHOLOGY. By Fred A. Moss and Thelma Hunt. New York: Prentice-Hall, 1932, 548 pp., $4.50.

STRAIGHT AND CROOKED THINKING. By Robert H. Thouless. New York: Simon and Schuster, 1932, 261 pp., $2.00.

THE LAWS OF HUMAN NATURE: A GENERAL VIEW OF GESTALT PSYCHOLOGY. By Raymond H. Wheeler. New York: Appleton, 1932, 249 pp., $2.00.

THE WILD BOY OF AVEYRON. By Jean-Marc-Gaspard Itard; tr. by George and Muriel Humphrey. New York: Century, 1932, 128 pp., $1.75.

SOCIOLOGY

THE CONCEPTS OF SOCIOLOGY: A TREATISE PRESENTING A SUGGESTED ORGANIZATION OF SOCIOLOGICAL THEORY IN TERMS OF ITS MAJOR CONCEPTS. By Earle E. Eubank. Boston: Heath, 1932, 587 pp., $4.80.

ECONOMICS

A BASIS FOR STABILITY. By Samuel Crowther and others. Boston: Little, Brown, 1932, 369 pp., $3.00.

AMERICA FACES THE FUTURE. Edited by Charles A. Beard. Boston: Houghton, 1932, 424 pp., $3.00.

As I See It. By Norman M. Thomas. New York: Macmillan, 1932, 182 pp., $2.00.

Investing in Wages: A Plan for Eliminating the Lean Years. By Albert L. Deane and Henry K. Norton. New York: Macmillan, 1932, 163 pp., $1.75.

Jobs, Machines, and Capitalism. By Arthur O. Dahlberg. New York: Macmillan, 1932, 270 pp., $3.00.

Current Periodicals

PREPARED BY LINDA H. MORLEY, *Industrial Relations Counselors, Inc.*

ACCIDENTS

FARMER, ERIC (Investigator for the Industrial Health Research Board). Recent research into the causes of industrial accidents. *Journal of Industrial Hygiene*, Mar., 1932, Vol. 14, p. 84–86.

Some of the external factors causing accidents are fatigue, bad atmosphere and lighting conditions, and age. A personal factor is the accident-prone individual who is inherently liable to accident. Accident record statistics are suggested as valuable as a basis for determining cause of accidents, and thus helping to prevent them. Synopsis of three lectures given under the Health Clark bequest on Nov. 2, 9, 16.

AGE—BIBLIOGRAPHY

SHERA, J. H. (Bibliographer, Scripps Foundation for Research in Population Problems). Age factor in employment: a classified bibliography. *Bulletin of Bibliography*, May–Aug., Sept.–Dec., 1931, Vol. 14, p. 100–101, 128–129.

Classified bibliography of material giving "statistical and source data on the extent of old age dependency, and degree of discrimination against the older worker."

BUDGETS

HOYT, ELIZABETH E., AND MEINTS, VIOLA C. (Iowa State College). Academic incomes and planes of living. *American Economic Review*, Mar., 1932, Vol. 22, p. 78–81.

Comparison of incomes and expenditures of faculty families of University of California, Yale University, and Iowa State College, giving average proportion spent by each group for the various subitems of house operation and miscellaneous, including education, health, recreation, savings, charity, etc. Found that while members of same profession may have practically same planes of living, they may diverge greatly in some items.

EMPLOYEE REPRESENTATION IN MANAGEMENT

MANDER, GEOFFREY (Mander Brothers, Limited, Wolverhampton, England). Case for works councils. *Contemporary Review*, Apr., 1931, Vol. 139, p. 442–447. (Abstract in *Social Science Abstracts*, Jan., 1932, Vol. 4, p. 78.)

Author introduced bill in parliament making works councils compulsory in all factories employing 50 or more workers. Gives essential conditions for success of council, as worked out in his own firm.

EMPLOYMENT CONTRACTS

SEIDMAN, JOEL I. (Johns Hopkins University). Yellow dog contract. *Quarterly Journal of Economics*, Feb., 1932, Vol. 46, p. 348–361.

Describes the growth of the "Yellow Dog" contract, and the use in industry of the non-union agreement. Gives provisions of such contracts. Believes use of "Yellow Dog" contract will decline in the future. If the Supreme Court leads the way, the state courts will follow. While it would still be possible to force employees to sign non-union agreements, if the courts refuse to enforce them, it will be of no advantage to an employer to do so.

FATIGUE

SHEPARD, GEORGE H. (Purdue University; Chairman Gilbreth International Committee for Elimination of Unnecessary

Fatigue). Year's progress in fatigue work. *Society of Industrial Engineers Bulletin*, Nov., 1931, Vol. 13, p. 20–24.

Work is being carried on in all parts of the world on fatigue by the different colleges and industrial leaders. These brief analyses show that studies are being made on effect of job on worker, fatigue tests, posture, sleep and fatigue, farm and domestic fatigue, monotony and fatigue, noise elimination, etc.

HEALTH

APPEL, K. E. Psychiatry in industry. *Occupational Therapy*, Aug., 1931, Vol. 10, p. 207–216.

"Appel cites instances, chiefly from the work of Mayo, Pennock, and Anderson, illustrating what psychiatry has accomplished in industry by adjusting workers to their environment." (From abstract in *Journal of Industrial Hygiene*.)

Nineteen thirty-one a remarkable health year. *Statistical Bulletin*, Jan., 1932, Vol. 13, p. 1–9.

In spite of the depression and the widespread epidemic of influenza which occurred during the first quarter, the 1931 death rate exceeded the previous minimum by only one per cent. Six diseases—tuberculosis, diphtheria, whooping cough, pneumonia, diarrheal complaints and puerperal conditions and two types of accidental death—recorded lower mortality rates in 1931 than ever before. Three diseases—cancer, diseases of the heart, and diabetes—registered higher death rates than ever before. Fatal automobile accidents also rose more than 5 per cent.

HOURS OF LABOR

Factors affecting shorter work schedules. *Service Letter on Industrial Relations*, New Series, Feb. 29, 1932, No. 86, p. 397–400.

Discusses effect of shorter hours on employment, wages, production, prices, mechanization, and leisure. Believes shortening of plant operation would violate sound business principle that equipment should be utilized to fullest extent. Suggests operating with shorter shifts but double shifts, as from 6 a.m. to 6 p.m., shifts changing at noon.

INCENTIVES

JUCIUS, MICHAEL J. Use of wage incentives in industry, with particular reference to the Chicago area. *Journal of Business of the University of Chicago*, Jan., 1932, Vol. 5, p. 76–85.

Forty companies, the largest in the respective industries employing 152,163 workers, were investigated. Information was secured through personal interviews, and limited to industrial workers. 44,674 were on time wages, 58,467 were on straight piecework, and 49,022 on some form of bonus or premium payment. Sixty-nine and nine-tenths per cent are on individual payment and 30.1 per cent on group payment. Gain sharing seemed to be predominating plan in steel industry; piecework favored in shoe and tin canning industry, printing industry and food products industry (except meat packing) tended toward time wages. Found only few plans widely used.

MACHINERY IN INDUSTRY

Dial telephone and unemployment. *Monthly Labor Review*, Feb., 1932, Vol. 34, p. 235–247.

Summary of study made by United States Bureau of Labor Statistics in 1930. Statistics available only for Bell Operating companies, who own 91.8 per cent of all company dial stations and 86.4 per cent of all manual stations. Before 1929 technological displacement led to little unemployment; the decline of employment opportunities was "obscured by resignations and rapid turnover." In Nov., 1931, a public announcement in regard to a proposed "cut over" to dial, said ". . . we now feel warranted in promising employment to all our regular employees involved."

Effect of technological changes upon occupations in the motor-vehicle industry. *Monthly Labor Review*, Feb., 1932, Vol. 34, p. 248–252.

Comparison of studies made by Labor Statistics Bureau in 1922, 1925, 1928, and 1930 (Wages and Hours of Labor Series), showing outstanding changes in connection with machinery operations, bench work, paint shops, and machine tool maintenance. Considerable reduction in bench work since 1922. Adoption of pyroxylin lacquers has caused fluctuation in the paint shop and finishing occupations in the industry.

VAN DEVENTER, JOHN H. (Editor, Iron Age). Machine has been libeled: some facts about the relation between the machine and unemployment for those who long for the "good old days." *Printers' Ink*, Jan. 21, 1932, Vol. 158, p. 73–74, 76.

Reviews the condition of the workers in the "good old days" when little children slaved all day carrying heavy burdens; when laborers worked from five until eight; when women worked fourteen hours in coal mines chained to coal cars—all this before the machine age. Believes present depression is not a state of technological unemployment because more machines are idle than men, and that the way to outwit depression is to "build prosperity in face of a declining price trend."

MANAGEMENT

ALEXANDER, MAGNUS W. (President, National Industrial Conference Board). Trends in industrial management. *Service Letter on Industrial Relations*, New Series, No. 85, Jan. 30, 1932, p. 1–4.

"In so far as there are any discernible trends in American industrial management, they are toward a leadership animated by a spirit of social service as well as of economic achievement, and imbued with a desire and a determination to make management a constructive factor in the social progress of the nation."

DAVIS, ROBERT J. (Comptroller, Hills Brothers Co.). Administrative control as illustrated by the Hills Brothers Company. *Bulletin of the Taylor Society*, Feb., 1932, Vol. 17, p. 6–17.

Planning by forecasting sales and production a year in advance, with monthly check-ups, daily reports, and usable control figures, are advocated as the principles for coordination of sales, production, and stock. In order to control costs, budgets are established once a year, and in order to establish quality control tests, examinations, etc., are made.

OCCUPATIONS

Retail Credit Company. Manufacture of linoleum. *Industry Report*, Feb., 1932, Vol. 7, p. 11–22.

Gives the duties required of all employees for all jobs in all departments. This industry comprises about seven establishments, employing 5,544 wage earners. Typical plant is described and information is given on hours worked, accidents, frequency rate, days lost, etc. Includes potential health hazards and process of manufacture.

PENSIONS

KIMBALL, INGALLS (Director of Group Annuities, Metropolitan Life Insurance Co.). Will pensions work in our case? *Nation's Business*, Mar., 1932, Vol. 20, p. 28–30, 94, 96, 98.

Explanation of annuities as applied to a manufacturing plant showing advantages to the organization, with figures on costs.

SOCIAL ECONOMIC PLANNING

AMES, ADELBERT, JR. Progress and prosperity: a suggested program. *Dartmouth Alumni Magazine*, Jan., 1932, Supplement, Vol. 24, p. 1–15.

Classifies human activities on basis of the extent to which products of such activities can be overproduced. Believes diverting capital and labor to new developments would tend to prevent overproduction and associated depressions. Suggests relieving such enterprises from taxation and increasing protection in such fields as a way to further developments.

BRUÈRE, ROBERT W. Swope plan and after. *Survey*, Mar. 1, 1932, Vol. 67, p. 583–585, 647–648, 653.

Mr. Bruère believes "the strength of the Swope plan is in its clear definition of the many things which private initiative may reasonably be expected to do. Its greatest weakness is in its reiteration of the common fallacy that public action and private initiative are necessarily antagonistic." Thinks problem of unemployment is a deep seated problem, inherent in planlessness of the economic life.

DRURY, HORACE B. (United States Shipping Board). Hazard of business: the present need for new motives in industry if it is to operate for the public good. *Bulletin of the Taylor Society*, Dec., 1931, Vol. 16, p. 252–255.

Discusses hazards due to intensification of competition and the changeableness and uncertainty of economic and other conditions. Suggests that national planning must find some way by which those industries which are losing can be given enough support to keep them in steady operation.

JOHNSTON, G. A. (Chief of Section, Intelligence and Liaison Division, International Labour Office). Social economic planning. *International Labour Review*, Jan., 1932, Vol. 25, p. 58–78.

Describes four main types of planning: (1) absolute socialist planning; (2) partial state socialist planning; (3) voluntary business type; (4) social-progressive type. An essential problem in social economic planning relates to the form of control to be exercised both in initiation and realization. Thinks consensus of opinion is that the control should be both collective and social.

SWOPE, GERARD (President, General Electric Company). Stabilization of industry. *Proceedings of the Academy of Political Science*, Jan., 1932, Vol. 14, p. 561–570.

Tells of more important features of plan to stabilize industry and explains more fully the points which have not been understood or have aroused criticism. Shows how this plan seeks to place same social burdens on competing companies in various parts of the United States and places on organized industry obligation of coördinating production and consumption and assuming greater responsibility for stabilizing employment.

TRADE UNIONS

SCHWENNING, G. T. (University of North Dakota). Prospects of Southern textile unionism. *Journal of Political Economy*, Dec., 1931, Vol. 39, p. 783–810.

Some of the major problems confronting labor organizers in Southern textile mills are: superabundance of man power; dire poverty of population; presence of large negro reserve; predominance of women operators, and the cultural background of the workers themselves. "These obstacles to union progress constitute enormous difficulties, yet they have been accorded but passing mention in the current optimistic writings on the subject of southern textile unionism."

UNEMPLOYMENT SURVEYS

CROXTON, FREDERICK E. (Columbia University). Unemployment in Buffalo, N. Y., November, 1931, and comparison with November, 1929 and 1930. *Monthly Labor Review*, Feb., 1932, Vol. 34, p. 262–275.

Findings showed that proportion of unemployed males was over 1½ times as great in 1931 as in 1930 and 4 times as great as in 1929. Percentage of part-time workers amounted to about 1¼ in 1931 as in 1930, and over 3 times as great in 1931 as in 1929. The least unemployment was found in 35–45 age group in 1930 and 35–40 age group in 1931. The most full-time employment and least full-time unemployment was found for native whites, while just the opposite held true for native colored groups.

UNEMPLOYMENT INSURANCE

COMMONS, JOHN R. (University of Wisconsin). Groves unemployment reserves

law. *American Labor Legislation Review*, Mar., 1932, Vol. 22, p. 8–10.

Reversing the European principle of insurance, where the payments by employers are turned into a common fund, the Huber and Groves bills are based on plan of "house funds" by which each employer is made responsible only for his own employees. The Wisconsin law also sets up advisory state and local committees at local employment offices to supervise all voluntary schemes. Main purpose of law is unemployment prevention.

UNITED STATES—ECONOMIC CONDITIONS

WELD, L. D. H. (Director of Research, McCann-Erickson, Inc.). This depression: a statistical study of actual conditions, showing that the bad is strangely over-emphasized and exaggerated. *Printers' Ink*, Jan. 28, 1932, Vol. 158, p. 3–4, 6, 104–105, 106.

Statistics show that 42,000,000 people are still at work in the United States, and that a large proportion of idle have some members of their family who are earning something. National income has dropped, but also cost of living. The Postal Savings deposits amounted to $500,000,000 in Sept., 1931, while in Sept., 1930, they were less than $200,000,000. Comparable figures with those of 18 years ago give an idea of great progress country has made. Believes this lesson will leave permanent and beneficial effects.

WAGES

BRUNSMAN, HOWARD G. Fluctuations of payrolls in Ohio in prosperity and depression. *Bulletin of Business Research*, Jan., 1932, Vol. 6, p. 11–12.

Payroll figures presented for both non-manufacturing and manufacturing concerns, with total for both. All areas showed highs in non-manufacturing payrolls in 1929—all suffered declines to 1931, although they were less severe than in manufacturing industries. In general, payrolls in Cleveland and Columbus areas showed greatest stability in 18 year period, and in Canton and Akron area registered greatest variation.

LOSELY, H. P. (Consulting Engineer). Would regulated wages assure prosperity? *Factory and Industrial Management*, Mar., 1932, Vol. 83, p. 120–122.

Two objectives which are believed possible to achieve by regulation are: (1) "protection of investment and organization of the progressive employer against the 'cut throat' competitor; (2) bringing of wages for the decent and progressive wage earner into a scale which will fairly reward his efforts and compensate him for the limitations imposed by specialization." Suggests that Interstate Labor Commission be set up to draw up and enforce minimum wage scales.

STONE, R. W. Wage policies in depression. *Journal of Business of the University of Chicago*, Jan., 1932, Vol. 5, p. 19–27.

Believes that "since wage reduction is at best disturbing, and since obviously the most important factor holding up recovery is the stringent credit situation, a further general cut in wage rates would not seem advisable. Present situation calls for effective measures to expand bank credit."

WOMEN

BOOTHE, VIVA (Assistant Professor of Business Research and Assistant Editor of Publications, Bureau of Business Research, Ohio State University). Gainfully employed women in the family. *Annals of the American Academy of Political and Social Science*, Mar., 1932, Vol. 160, p. 75–85.

Believes change in woman's sphere due to modern industrial processes which have reduced her services in the home to a minimum. In wage earning classes economic necessity was found to be the main reason for women working. In the group above the wage earning class, there is increasing number of cases where marriage and careers have developed successfully side by side. "Task for future is to discover some form of division of labor in the home, where individuals can cooperate in a life that is mutually satisfying . . . that adjustments will gradually be made that take woman into

account on basis comparable to that of man."

WORKMEN'S COMPENSATION

Workmen's compensation legislation of 1931. *Monthly Labor Review*, Jan., 1932, Vol. 34, p. 54–68.

Of the 41 states whose legislatures met in 1931, 33 acted on subject of workmen's compensation. Gives résumé of amendments to the laws as made by the different state legislatures.

Selecting Women for Shop Work

By Elinor G. Hayes, *Hawthorne Works, Western Electric Company*

In forecasting an applicant's likelihood of successful adjustment to the kind of work to be done, psychological tests have a useful place, when the interpretation of scores rests on a basis of ascertained fact. Then the employee and the industry both benefit.

The Hawthorne Works of the Western Electric Company employs women in four general classes of shop work involving varying degrees of speed in hand movements. In a series of preliminary investigations, two pegboard tests were found to have some relation to the job success of a group of experienced machine operators, a group of newly-hired machine operators, and two groups of experienced bench hands. These tests, as well as age, schooling, previous experience, and marital status were then studied with reference to the learning progress of 1248 women hired for shop work. Test scores showed a consistent positive relation to success in learning each of the four general classes of work. Other items showed varying degrees of relation to learning success. Composite scores were worked out for each of the classes of work, weighting test scores and previous experience in proportion to their importance for forecasting progress in the occupation.

THIS is an account of experimentation leading to the present standards for one group of occupations at the Hawthorne Works of the Western Electric Company, namely, shop occupations in which women are employed.

Use was made of psychological tests at this plant as early as 1918 to aid in selecting students for training as shop clerks and toolmaker apprentices. Intelligence tests soon became a part of the regular routine of employment for one type of engineers, draftsmen, clerks of various kinds, and inspectors. Follow-up studies of individuals selected with the help of intelligence tests demonstrated that those with higher scores more often made good progress and less often became personnel problems than did people with lower scores.

In recent years, surveys have been made of the requirements of other occupations on various levels. Tests designed to measure these requirements have been given to sample groups of good and poor workers in the occupations studied, and the tests in which good workers significantly excelled poor workers have been experimented with further.

The Problem of Selecting Women for Shop Work

The development of scientific standards for selection is especially desirable in order to keep labor turnover at a

minimum and to facilitate promotions from one grade of work to another. These factors emphasize the importance of original selection. The additional fact that employees who are paid on a piece-work basis are guaranteed a minimum day work rate results in a large increase in costs when piece-workers are hired who are not well-suited to their work, and so are slow in bringing their piecework output up to a point that covers their day work rate. These two considerations—the policy of obtaining desirable employees by wise initial selection rather than by a "hire and fire" policy, and the desirability of obtaining employees who can learn the work in a minimum of time—were kept especially in mind in the effort to improve employment standards.

Two considerations make it desirable to select employees because of suitability for broad general classes of work rather than for any particular starting job within that class, and, if possible, to test fundamental abilities required for success in all rather than to test for the specific details of a particular job. These considerations are changing processes, and personnel policies. Processes change because engineers are at work constantly to improve methods. It is therefore not so desirable to select a group of women who are specially adapted in every particular to success in one specific operation as it is to select those who have the fundamental abilities required for success in a general class of work and who accordingly would be able, as processes change, to adapt themselves to more than one job within that class of work.

The personnel policies which give importance to flexibility rather than to adaptation to a specific job are those which stress the desirability of transferring employees to other jobs if for any reason (such as change in process) they are no longer needed on those for which they were hired; and of promoting to higher grades of work those whose length and character of service warrant.

DESCRIPTION OF JOBS

Women are employed in the shops at Hawthorne chiefly in the following classes of work: bench work; coil winding; operation of punch presses, drill presses, burring machines, and chuck motors; and operation of insulating machines.

Bench work is manual, requiring in some cases the use of tools or mechanical devices, but not involving power machinery. Speed of movement in picking up and handling the piece parts is essential.

Operators of coil winding machines set up the empty coil or spool in the machine; thread through guides the wire which is to be wound upon the coil or spool; operate the winding mechanism by means of hand and foot lever controls; place insulating papers on the coil at specified places while the machine is in operation; and splice broken wires. Speed of hand movement is essential for all types of winding.

Operation of punch presses, drill presses, burring machines, and chuck motors involves feeding piece-parts to the machine, which performs the operations of punching, drilling, etc. A fundamental factor in high output

is skill in picking up and handling the piece-parts, which in the women's jobs are usually rather small.

The insulating machines are those which wind paper, cotton, or silk insulation upon wire. The winding process is automatic. The operator's task is to see that wire and insulating material are in position, set the machine in motion, and watch the operation, stopping any head in which either wire or insulating material runs out, jams, or breaks, and splicing on a new coil or reel of wire or new spool of insulating material. Fundamental factors in all are speed of reaction and dexterity in getting the materials in position through the guiding mechanism, and in splicing wire, textiles, or paper.

TABLE 1

Distribution of scores made in Pegboard I by 1361 women when hired for shop work (experienced employees not included)

	SCORE—TOTAL NUMBER OF PEGS INSERTED												
	100–104	105–109	110–114	115–119	120–124	125–129	130–134	135–139	140–144	145–149	150–154	155–159	160–164
Number of cases.....	3	8	15	49	125	183	245	257	211	150	80	30	5

Mean = 135.92. Standard deviation = 10.20.

PRELIMINARY EXPERIMENTS

A. Coil Winders. The first stage in the development of standards was the tryout of a number of tests with experienced coil winders. Ten tests were tried with some or all of the cases.

One test was used in the later experiments and so should have some description. This will be referred to as Pegboard I. The same kind of board was used as is used by the Eastman Kodak Company in testing assemblers. Down the center of the board are two rows of twenty-five holes, each .133 inch in diameter. Just beyond the rows of holes is a box containing brass pegs .125 inch in diameter and one inch in length. The subject is required to place the pegs one at a time in the holes for a 30-second period with the right hand, then for 30 seconds with the left hand. The pegs are then removed, and the subject replaces them with both hands. The score is the total number of pegs placed in three trials each of the right hand, left, and both hands. The distribution of total scores in this test for 1361 women hired for shop work is shown in table 1. The correlation between two trials is .822 ± .005, giving the high reliability of .93 for three trials. $\left(\text{Reliability} = \frac{3r}{1 + 2r}.\right)$

The criterion of job success was a composite of supervisors' ratings and output on a scale from 1 to 8. As a complete set of supervisors' ratings was obtained only once, reliability of the entire criterion could not be computed. The correlation between output figures for two 3-months' periods was .79 ± .02. Reliability for the six months' period would therefore be fairly high (.88).

Table 2 shows 114 cases classified

by pegboard scores and by the criterion of job success. The correlation is .31 ± .06. Although the correlation is not high, the difference between the job success of those scoring 135 or higher and those scoring below 135 is marked. For selective purposes, such group differences are valuable if found consistently.

A dotting test showed a similar relation but was found more difficult to administer because of the unfavorable reaction some of the subjects showed toward a pencil and paper test. Since it was not used in the major experiment, results in the preliminary experiment are not given in detail. None of the other tests showed significant relation to the criterion.

The pegboard and dotting tests were next given to new operators immediately after employment for all kinds of coil winding. Their scores were not reported to interviewers or supervisors, but their training records were followed up.

Table 3 shows 57 new operators classified by scores in Pegboard I and output on a scale from 1 to 8. This scale is not the same as the job success criterion used previously, since it is based on output only. The correlation is again fair (.37 ± .08) and the difference between the high and low score groups marked.

TABLE 2

One hundred fourteen experienced coil winders classified by score in Pegboard I and by job success (composite of output and supervisors' ratings)

JOB SUCCESS CRITERION	TOTAL	SCORE IN PEGBOARD I								
		115–119	120–124	125–129	130–134	135–139	140–144	145–149	150–154	155–159
Total.....	114	1	3	9	14	37	28	16	3	3
8	3					1	2			
7	10				1	3	5			1
6	18				2	7	5	4		
5	13				2	4	2	4		1
4	25			2	3	9	3	6	1	1
3	21		1		5	9	3	2	1	
2	19	1	1	4	1	3	8		1	
1	5		1	3		1				
Per cent rated 4–8 in job criterion...	60.5		37.0				67.8			

Another follow-up of these operators was begun one year after employment. Only twenty were on comparable work and on a piece work basis during their 13th, 14th and 15th month after employment. The others had left the Company, been transferred to other work for part or all of the time, or were not working on piece work during the three months just following the completion of a year's service. By this time all were averaging more than their day work rate.

Those with high scores were not averaging significantly more than those with lower scores. Investigation revealed the fact that supervisors in assigning work were tending to give the jobs which ran steadily to the girls whom the first few months had shown to be slow in learning new work. The quicker, more skillful girls often were changed so frequently that their toward paper-and-pencil tests. Third, that follow-up during the early period of learning the job was more significant than later follow-up when methods of assigning the work create a spurious appearance of equality in abilities. It was therefore determined that in later studies both output and turnover during the early period should be investigated.

TABLE 3

Fifty-seven newly employed coil winders classified by scores in Pegboard I and output during first 8 weeks

OUTPUT CRITERION	TOTAL	SCORE IN PEGBOARD I									
		Less than 115	115–119	120–124	125–129	130–134	135–139	140–144	145–149	150–154	155 and over
Total	57	3	3	4	3	10	8	6	11	5	4
8	8					1	1	1	1	3	1
7	13		2			1	3	1	2	1	3
6	15			2	2	4	2	1	4		
5	8	1	1	1	1		1	1	1	1	
4	9	1				3		2	3		
3	1			1							
2	0										
1	3	1				1	1				
Per cent rated 6 to 8 in criterion	63.2	52.2					70.6				

output was little if any higher than the other operators.

Three conclusions were drawn from these and other follow-up studies: First, that the pegboard type of test showed a sufficiently close relation to coil-winding success to justify further experiment. Second, that it was more suited to testing dexterity than a pencil dotting test, which showed less relation to success and also proved difficult to administer because of the shop applicant's unfavorable reaction

It was, however, impossible to begin a study of new operators immediately, since at this time there was little new employment in the shop departments. In the meanwhile, one more experiment was made with experienced employees.

B. Bench Hands. The type of simple finger dexterity required for pegboard test I seemed to be analogous to the ability required for bench work. To try out this hypothesis the pegboard test was given to 117 women

bench hands. The finger dexterity test developed by Johnson O'Connor at the General Electric Company[1] was tried with the same group. This test, like the other pegboard, consists of a board with 100 holes in which pegs are to be inserted. But these pegs are smaller in diameter (.072 inch), to be inserted three at a time in holes .196 inch in diameter, arranged in square formation. The score is the time required to fill 100 holes with the dominant hand. It is referred to as Pegboard II for convenience. The distribution of scores for women at Hawthorne is shown in table 4. This is similar to O'Connor's distribution. The correlation between time for the first five rows and time for the second five rows is .761 ± .017. The reliability for the total is therefore fairly high (.86).

The testing of the 117 bench hands was done during a period when the force was not expanding, and new employees had not been hired for this work for several months. During the interval since new employees had been taken on, most of the bench hands whom the supervisors designated as not efficient had left or been transferred to other work. The supervisors were able to select only eight with as long service as the average whose output was definitely below that of the others. The scores of these eight in both pegboards were lower than the scores of most of the bench hands designated by their supervisors as having satisfactory output, as is shown in chart I.

Even among the large group designated as satisfactory operators, there were doubtless differences in efficiency. But at that time there was no adequate method of measuring the differences. The girls were working under several supervisors, on a variety of jobs. Although beginnings had been made toward setting "bogeys" for the jobs—that is, the amount of output on each job that might be considered a fair standard to expect of an efficient operator—at the time of this first study the bogeys were far from comparable.

It happened, however, that one small group was available in which all the girls had been working for nine months on exactly the same type of work under controlled conditions, uniform for all. These were the five girls in a test room study of the effect

TABLE 4

Distribution of scores in Pegboard II for 1370 shop women when hired for shop work (experienced employees not included)

	SCORE (MINUTES)												
	5.2–5.5	5.6–5.9	6.0–6.3	6.4–6.7	6.8–7.1	7.2–7.5	7.6–7.9	8.0–8.3	8.4–8.7	8.8–9.1	9.2–9.5	9.6–9.9	10.0–10.3	10.4–10.7
Number of cases.....	1	13	60	126	197	235	258	174	128	76	53	32	16	1

Mean = 7.75′. Standard deviation = .91′.

[1] Mildred Hines and Johnson O'Connor. A Measure of Finger Dexterity, *Journal of Personnel Research*, 1926, vol. IV, pp. 379–382.

of changes in working conditions.[2] Their output records had been kept in detail for the entire period of the study, and were comparable to an extent seldom found in an industrial experiment. These girls were given the two pegboard tests. Their average rank in the two was exactly the same as their rank in total units of output during the nine months they had worked in the test room, as shown in table 5.

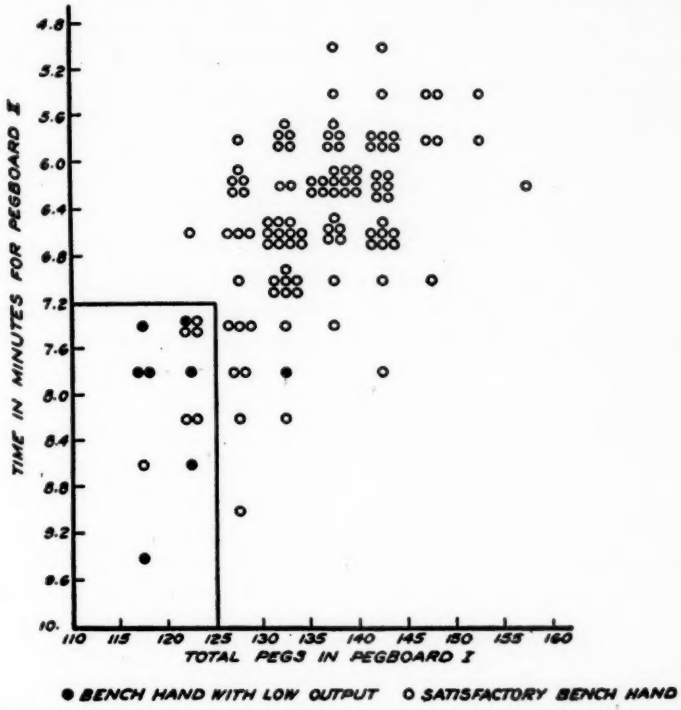


CHART I. 117 BENCH HANDS CLASSIFIED BY SCORES IN TWO PEGBOARD TESTS

TABLE 5

Five relay assemblers in test room showing output and scores in Pegboards

NAME	PEGBOARD I		PEGBOARD II		AVERAGE RANK IN PEGBOARDS	OUTPUT, 1-23-28 TO 10-20-28	
	Score	Rank	Score	Rank		Units	Rank
Jennie	172	1	5.35′	1	1	106,919	1
Mary	168	2	6.25′	3	2	104,744	2
Wanda	156	4	6.06′	2	3	102,872	3
Theresa	167	3	6.87′	4	4	101,904	4
Anna	139	5	7.42	5	5	92,044	5

These experiments indicated values

[2] G. A. Pennock. Industrial Research at Hawthorne. *Personnel Journal*, 1930, vol. VIII, pp. 296–313.

to be obtained from the pegboard tests in selecting bench hands, but there were several reasons against discontinuing the experiment with bench hands at this point. These reasons were: the small number of low output cases in the first group, the small total number in the second group, and the fact that both groups were composed only of experienced operators. It was therefore decided to test a random sample of newly hired bench hands as well as an additional group of newly hired coil winders, and at the same time to include other shop jobs for women in the study.

THE MAJOR EXPERIMENT

The two pegboard tests were given immediate after hiring to all women employed for the four shop occupations described above. The tests were not given until after selection was made, and scores were not reported to employment interviewers or to supervisors.

SELECTIVE FACTORS STUDIED

In addition to the two test scores—a count of total pegs for Pegboard I and a time score for Pegboard II—information was obtained as to age at last birthday, school grade completed, previous experience, and marital status.

THE CRITERIA OF SUCCESS

The criterion of success for machine operators was output during the first eight weeks on the job. The correlations between output for the first four weeks and output for the second four weeks on the job were such that the reliability coefficients for eight weeks were as follows: insulating machine operators .87; coil winders .78; punch press operators .81. Operators having higher earnings than the average for new employees on the same kind of machine were considered quick learners. Operators leaving before attaining their day work rate were counted with the slow learners.[3] Many who leave before completing training do so because of difficulty in learning, as was found by comparison of their records during the periods worked. Even if some who leave have good output records, the expense of training them is largely lost, since costs of employment, instruction, waste material, and other overhead in most cases balance whatever output they produce while learning. They should for this reason, if no other, be counted in the non-preferred group.

The criterion for bench hands was the supervisor's estimate of whether the girls were quick, fair, or slow learn-

[3] Millicent Pond. Selective Placement of Metal Workers. *Journal of Personnel Research*, 1927, vol. V, pp. 345–368; 400–467. Miss Pond in using separations in this way points out that "the notoriously high percentage of terminations in newly hired groups ought to be grist to the mill of personnel research" (p. 357).

Hines and O'Connor use terminations in the same way on the basis that "the object of an employment office should be to hire none of the failures, as few as possible of those who leave within a short time, and as many as possible of the successful workers (footnote 1, p. 382).

ers, based on the percentage of "bogey" attained during the first month. Standard tasks had not been set by time study, as in the case of the machine jobs, but "bogeys" had been set up for most bench work jobs. These were more or less rough estimates of the maximum output which could be expected of a good, experienced bench hand, set by the foremen on the basis of their experience. The correlation of average bogey percentages for the first two weeks with the second two weeks was .809 ± .019. This indicates a fairly high reliability, for the period of 4 weeks checked (.89). The supervisors were asked to designate as quick workers those whose bogey percentages were definitely above the average of the new employees on that job, approximately 40 per cent; as fair workers, those neither above average nor those who come to mind first when asked to name the slowest workers; and as slow workers those whose bogey percentages during the first month were such that they came to mind first when asked to name the slowest workers, approximately the lowest 10 per cent of new employees on that job. Those who left within the first month were considered with the slow operators as a non-preferred group, for the reasons given above.

METHOD OF ANALYZING THE DATA

For each occupation the proportion of quick learners was figured for various ranges of test scores, age, schooling, previous experience, and marital status. The proportion of quick learners in each range was assigned as a weight to that range, and the weights of items showing reliable differences[4] were added together for a composite score, according to the method reported by Dr. Pond,[5] with the following exceptions. Age was not used in the composite score because it would have usually given a weighting toward the selection of very young employees. This did not seem desirable as long as a fair proportion of the older employees is able to learn the work quickly. Marital status also was not included because it seemed wiser to consider each case with reference to the conditions of work and the circumstances causing the woman to seek employment.

RESULTS—*Coil Winders*

When the various items studied are compared with the learning progress of coil winders, we find that certain groups have higher proportions of quick learners than others. The proportions of quick learners in each, classified by the selective items, are shown in table 6. Age, experience, marital status, and scores in the pegboards show reliable differences.

It will be noted that neither coil winding experience elsewhere nor two or more years of any shop experience indicates as great probability of learn-

[4] For formula see G. U. Yule, *Theory of Statistics*, London, 1922, p. 27.

Differences equal to twice the standard error were regarded as reliable for this purpose. This reliability represents a probability of 43 to 1 that the difference is not due to chance but may be expected to occur again if further cases are studied (cf. W. V. Bingham, and Max Freyd, *Employment Psychology*, 1926, pp. 171, 173, 262).

[5] See footnote 3 above.

ing the work quickly as is found among the group having some shop experience but less than two years, not winding.

not too firmly set, adapt themselves more readily to our methods.

Weights were assigned to the various

TABLE 6

Proportions of coil winders who are quick learners grouped by various selective items

SELECTIVE ITEM	RANGE	PER CENT WHO ARE QUICK LEARNERS		NUMBER	DIFFERENCE FROM PER CENT IN WHOLE GROUP	S.E.	D/S.E.
Total			30.6	209			
Age	17–19	37.7	35.9	170	5.3	1.5	3.5
	20–22	31.2					
	23–24	16.7					
	25–27	6.2	7.7	39	22.9	6.6	3.5
	28–34	0					
Previous shop experience	Less than 2 years, not winding	45.3	45.3	64	14.7	4.8	3.1
	Coil winding or 2 years or more not winding	27.2	24.1	145	6.5	2.1	3.1
	None	18.9					
Marital status	Single	34.3	34.3	172	3.7	1.5	2.5
	Married	9.5	13.5	37	17.1	6.8	2.5
	Widowed or divorced	18.7					
Pegboard I	150 or more	38.5	33.3	183*	2.5*	1.2	2.1
	125–149	32.9					
	115–124	13.1	12.0	25*	18.8*	8.6	2.1
	0–114	0					
Pegboard II	0 – 6.3′	53.8	37.8	98	7.2	3.4	2.1
	6.4′ – 7.3′	35.3					
	7.4′ – 9.0′	25.2	24.3	111	6.3	3.0	2.1
	9.1′+	12.5					
Schooling	9th or more	39.3	39.3	28	8.7	8.1	1.1
	8th grade	27.1	29.3	181	1.3	1.2	1.1
	0–7th grade	32.5					

* Records on Pegboard I for only 208 cases; per cent quick in 208 cases = 30.8.

These findings confirm the practical experience of instructors on this work, who maintain that operators whose habits of work learned elsewhere are

amounts of experience and scores in the pegboard tests corresponding to the percentages of quick learners. When these weights are added, com-

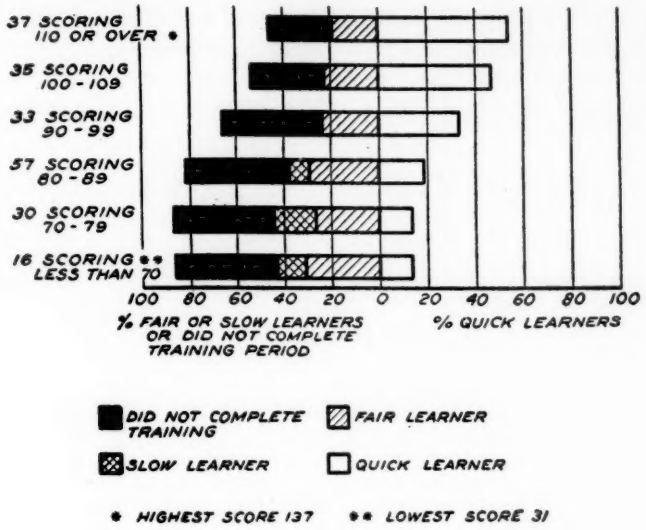

37 SCORING 110 OR OVER *
35 SCORING 100-109
33 SCORING 90-99
57 SCORING 80-89
30 SCORING 70-79
16 SCORING LESS THAN 70 **
100 80 60 40 20 0 20 40 60 80 100
% FAIR OR SLOW LEARNERS OR DID NOT COMPLETE TRAINING PERIOD
% QUICK LEARNERS
DID NOT COMPLETE TRAINING
FAIR LEARNER
SLOW LEARNER
QUICK LEARNER
* HIGHEST SCORE 137
** LOWEST SCORE 31

CHART II. PROPORTIONS OF QUICK LEARNERS AMONG GROUPS OF COIL WINDERS, CLASSIFIED BY COMPOSITE SCORE FOR EXPERIENCE AND TWO PEGBOARD TESTS (208 CASES)

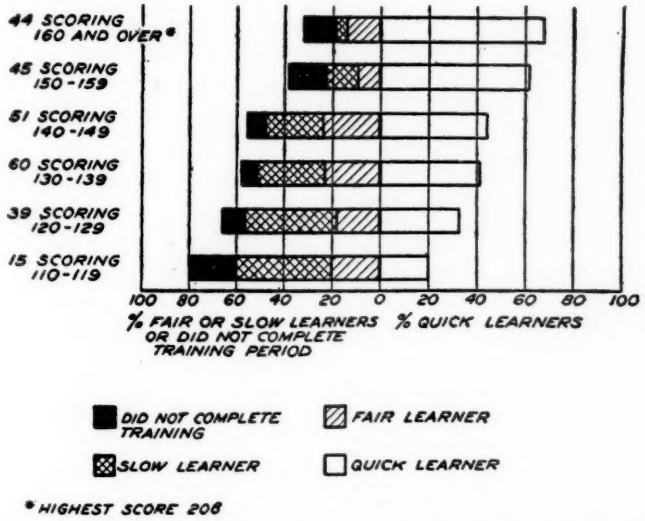

44 SCORING 160 AND OVER *
45 SCORING 150-159
51 SCORING 140-149
60 SCORING 130-139
39 SCORING 120-129
15 SCORING 110-119
100 80 60 40 20 0 20 40 60 80 100
% FAIR OR SLOW LEARNERS OR DID NOT COMPLETE TRAINING PERIOD
% QUICK LEARNERS
DID NOT COMPLETE TRAINING
FAIR LEARNER
SLOW LEARNER
QUICK LEARNER
* HIGHEST SCORE 208

CHART III. PROPORTIONS OF QUICK LEARNERS AMONG GROUPS OF OPERATORS OF PUNCH PRESSES AND SIMILAR MACHINES, CLASSIFIED BY COMPOSITE SCORE FOR EXPERIENCE AND TWO PEGBOARD TESTS (254 CASES)

posite scores are obtained ranging from 31 to 137. Chart II shows the proportion of quick learners in various groups for 208 cases for whom all the data were available. Of all scoring 90–137, 44.8 per cent were quick learners who completed training, while of those scoring 31–89 only 16.5 per

cent were quick learners who completed training. The correlation between score and output for those who completed training is .40 ± .05.

presses and similar machines, are shown in table 7, together with the differences from the whole group and the reliability of the differences.

TABLE 7

Proportions of operators of punch presses, drill presses, etc., who are quick learners, grouped by various selective items

SELECTIVE ITEM	RANGE	PER CENT WHO ARE QUICK LEARNERS		NUMBER	DIFFERENCE FROM PER CENT IN WHOLE GROUP	S.E.	D/S.E.
Total			48.3	261			
Pegboard II	−7.1′	65.4	65.4	78	17.1	4.7	3.6
	7.2′+	41.0	41.0	183	7.3	2.0	3.6
Pegboard I	150+	81.7					
	135–149	51.7	56.5	138	8.2	2.9	2.8
	120–134	41.1					
	0–119	28.6	39.0	123	9.3	3.3	2.8
Age	18–26	52.9	52.9	187	4.6	1.9	2.4
	17	38.1					
	27+	35.8	36.5	74	11.8	4.9	2.4
Previous shop experience	*Machines*						
	2 years +	60.6	55.7	113*	7.2*	3.5	2.1
	Less than 2 years	50.0					
	Not Machines						
	2 years +	47.7					
	Less than 2 years	41.2	42.5	141*	6.0*	2.8	2.1
	None	39.1					
Marital status	Single	53.0	53.0	170	4.7	2.26	2.1
	Married	39.1					
	Widowed	40.7	39.6	91	8.7	4.23	2.1
Schooling	9th +	60.0	60.0	25†	12.0†	9.5	1.3
	8th	47.5					
	0–7th	45.6	46.7	229†	1.3†	1.0	1.3

* Seven with no record of experience; per cent quick for 254 cases = 48.5

† Seven with no record for education; per cent quick for 254 cases = 48.0.

Operators of Punch Presses, Drill Presses, Burring Machines, and Chuck Motors

The proportions of quick learners in various groups of operators of punch

The two pegboard tests and experience were used in making up the composite selective score. The composite scores obtained by adding the weights for these three items range from 110

to 208. Chart III shows the proportion of good operators among various groups classified by composite scores. This chart is based on 254 cases for whom all the data were available. Of all scoring 140–208, 57.9 per cent were

Operators of Insulating Machines

The records of 214 insulating machine operators were followed up. The proportion of quick learners in various groups, classified by the selective items, are shown in table 8. The

TABLE 8

Proportions of operators of insulating machines who are quick learners grouped by various selective items

SELECTIVE ITEM	RANGE	PER CENT WHO ARE QUICK LEARNERS		NUMBER	DIFFERENCE FROM PER CENT IN WHOLE GROUP	S.E.	D/S.E.
Total			22.0	214			
Pegboard II	−6.7′	34.5					
	6.8′–7.5′	27.5	26.6	158	4.6	1.7	2.7
	7.6′–8.3′	23.1					
	8.4′–9.1′	12.1					
	9.2′+	4.3	8.9	56	13.1	4.8	2.7
Previous shop experience	2 years +	30.9	30.9	68	8.9	4.1	2.2
	Less than 2 years	19.5					
	None	15.9	17.8	146	4.2	1.9	2.2
Marital status	Married	29.9					
	Widowed or divorced	23.8	28.4	95	6.4	3.2	2.0
	Single	16.8	16.8	119	5.2	2.5	2.0
Pegboard I	125+	23.4	23.4	184*	2.0*	1.07	1.9
	−124	7.4	7.4	27*	14.0*	7.4	1.9
Age	20+	24.1	24.1	166	2.1	1.5	1.4
	17–19	14.6	14.6	48	7.4	5.2	1.4
Schooling	−7th	25.3	25.3	83	3.3	3.6	.9
	8th	20.8					
	9th +	16.7	19.85	131	2.15	2.2	.9

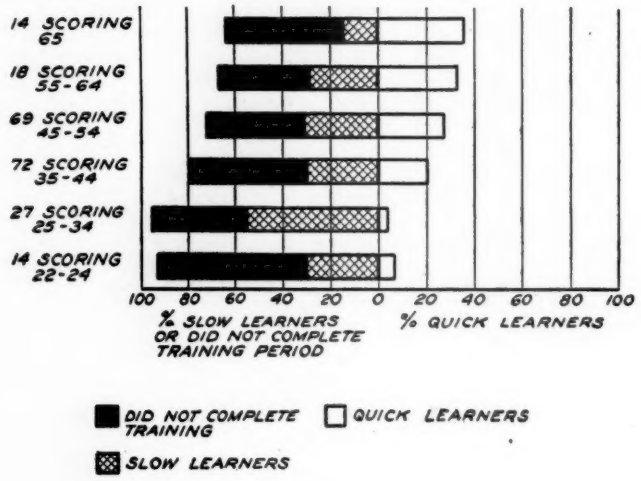
* Three with no record of Pegboard I; per cent quick for 211 cases = 21.4.

quick learners and completed training, while of those scoring 110–139, only 36.0 per cent were quick learners and completed training. The correlation between composite scores and output for those who completed training is .35 ± .04.

items which show reliable differences are experience, Pegboard II, and marital status.

The percentages of quick learners with various amounts of experience and ranges in pegboard scores were assigned as weights to the respective

groups. When these weights are added a composite score is obtained ranging from 22 to 65. Chart IV shows the proportion of quick learners in various groups. The output records of this group did not lend themselves to division into fair and slow operators as in the other occupations. The small proportion of quick learners out of the total hired is due to the fact that almost half of those hired did not complete the training period.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18 SCORING 55-64
69 SCORING 45-54
72 SCORING 35-44
27 SCORING 25-34
14 SCORING 22-24
100 80 60 40 20 0 20 40 60 80 100
% SLOW LEARNERS OR DID NOT COMPLETE TRAINING PERIOD
% QUICK LEARNERS
DID NOT COMPLETE TRAINING
QUICK LEARNERS
SLOW LEARNERS

CHART IV. PROPORTIONS OF QUICK LEARNERS AMONG GROUPS OF INSULATING MACHINE OPERATORS, CLASSIFIED BY COMPOSITE SCORE FOR EXPERIENCE AND PEGBOARD TEST II (214 CASES)

A number of changes were being made in the insulating departments at the time of the study and a good many operators were transferred to other work. The turnover from transfers and other reasons is ordinarily much lower than it was at the time of the study.

Of those scoring 45–65, 29.7 per cent were quick learners, while of those scoring 22–44 only 15.0 per cent were quick learners. The correlation between composite score and output for those who completed training is .31 ± .06.

Bench Hands

When the various selective items were compared with the learning progress of bench hands it was found that those with high pegboard scores and previous similar experience had significantly higher proportions of quick learners than were found in the group as a whole. The findings are summarized in table 9.

The percentages of quick learners were assigned as weights to the respective groups. The composite scores range from 73 to 183. The proportions of quick learners for various groups are shown in chart V for 304 cases for whom all data were complete. Of those scoring 130–183, 64.1 per cent learned quickly and completed training. Of those scoring less

than 130 only 30.3 per cent learned quickly and completed training.

The composite scores were computed for a second group of 259 cases who had also been tested immediately after employment. It is not to be expected that the composite score would differentiate quite as well between quick and slow learners in a second group as in the original group used in determining the weights since these weights were selected to give the maximum differentiation for this group. Still the differentiation for the second group is significant. Of 92 scoring 130 or higher, 46.7 per cent learned quickly, while of the 167 scoring below 130, only 28.1 per cent

TABLE 9

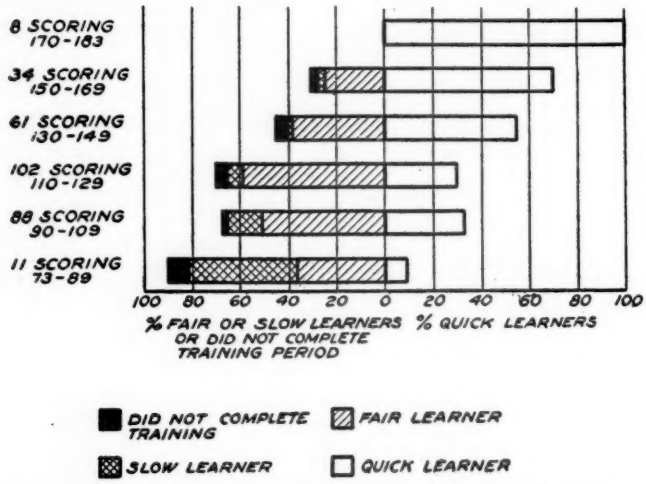
Proportions of bench hands who are quick learners grouped by various selective items

SELECTIVE ITEM	RANGE	PER CENT WHO ARE QUICK LEARNERS		NUMBER	DIFFERENCE FROM PER CENT IN WHOLE GROUP	S.E.	D/S.E.
Total			41.6	305			
Pegboard I	150+	71.9	60.4	101*	18.6*	4.0	4.6
	140–149	55.1					
	130–139	37.5					
	120–129	29.7	32.5	203*	9.3*	2.0	4.6
	−119	11.8					
Previous shop experience	Bench	53.1	49.1	183	7.5	2.3	3.3
	Not bench	46.0					
	None	30.3	30.3	122	11.3	3.4	3.3
Pegboard II	−6.7′	58.0	53.2	94	11.6	4.2	2.7
	6.8′–7.1′	47.7					
	7.2′–8.3′	38.8	36.5	211	5.1	1.9	2.7
	8.4′+	26.1					
Age	22 or more	44.0	48.2	114	6.6	3.7	1.8
	20 and 21	51.6					
	18–19	41.3	37.7	191	3.9	2.2	1.8
	17	31.4					
Schooling	9th +	50.0	50.0	58	8.4	5.8	1.4
	8th	41.5	39.7	247	1.9	1.4	1.4
	Less than 8th	36.4					
Martial status	Married	52.4	48.1	27†	6.0†	9.1	.7
	Widowed or divorced	33.3					
	Single	41.5	41.5	272†	.6†	.9	.7

* One with no record of Pegboard I; per cent quick for 304 cases = 41.8.

† Six with no record of marital status; per cent quick for 299 cases = 42.1.

learned quickly. The correlation between composite scores and supervisors' ratings for those completing training in the total of original plus check groups is .36 ± .03. To date not enough cases have accumulated to make a similar second check in the other three occupations, but such records as are available indicate that the relation found in the original groups is continuing to hold for additional cases.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34 SCORING 150-169
61 SCORING 130-149
102 SCORING 110-129
88 SCORING 90-109
11 SCORING 73-89
100 80 60 40 20 0 20 40 60 80 100
% FAIR OR SLOW LEARNERS OR DID NOT COMPLETE TRAINING PERIOD
% QUICK LEARNERS
DID NOT COMPLETE TRAINING
FAIR LEARNER
SLOW LEARNER
QUICK LEARNER

CHART V. PROPORTIONS OF QUICK LEARNERS AMONG GROUPS OF BENCH HANDS, CLASSIFIED BY COMPOSITE SCORE FOR EXPERIENCE AND TWO PEGBOARD TESTS (304 CASES)

TABLE 10

Sixty-two bench hands classified by composite bench work score and work record after 6 months

PER CENT BOGEY DURING 7TH MONTH	TOTAL	COMPOSITE SCORE											
		70–79	80–89	90–99	100–109	110–119	120–129	130–139	140–149	150–159	160–169	170–179	180–189
Total.....	62	1		11	8	6	16	5	1	3	8	2	1
80–99	32			6	4		8	1	1	3	6	2	1
60–79	10			4		2	3				1		
40–59	7					3	2	2					
20–39	3	1		1	1								
Left Co.	10				3	1	3	2			1		
Per cent with bogey of 80–99	51.6	40.4							86.7				

Six-Month Follow-Up

For reasons given above it was believed that the follow-up made soon after employment would give the most significant criterion by which to measure the value of the selective

items. Employees who showed the most aptitude in these early adjustments to the job were expected to prove the best adapted over longer periods. In most cases this adaptation over a longer period was more difficult to measure, because of the supervisors' custom, as mentioned previously, of assigning the easier and more steady-running jobs to the least apt employees.

A follow-up after six months was, however, made in one department where there was the largest number of employees doing comparable work after six months. Sixty-two people had been employed as bench hands for this department. Ten had left. Records of output were obtained for the rest during their seventh month of employment. By this time the learning curve of all had become fairly level. Output varied from 32 per cent of the bogey to 99 per cent. Table 10 shows these employees classified by the composite scores for bench work and by work record after six months. The correlation between composite scores and output for the 52 cases working at the end of six months is .30 ± .08. Here again we find a marked difference between the output of the group making high scores and the group making low scores.

SUMMARY AND CONCLUSIONS

In the experiments described, pegboard tests have been tried with 1541 women divided into nine different groups doing four general classes of shop work. The correlations found between scores and output, although not large, have appeared consistently in all the groups, both those studied soon after employment and those studied after longer periods.

Differences between groups making high and groups making low scores were large enough to indicate considerable improvement in efficiency possible through selecting high-score operators. The reliability of these differences may be deduced from the fact that in most cases they are 2 to 4 times the standard error of the difference, and, more conclusively, by their repeated occurrence in all the groups studied.

Test scores were the only selective items studied which showed a consistent positive relation to success in four occupations.

By assigning different weightings to the scores and to previous experience, according to their relation to success in each of the occupational groups, composite scores have been worked out for each of these occupations. The composite scores showed relation to output not only for the groups used in determining the relative weights, but also for an independent group of more than 250 bench hands.

On the basis of these studies the two pegboard tests are being used in the examination of women applying for shopwork. So far as possible each new employee is placed on the job for which her composite scores indicate the greatest probability of success.

Manuscript received January 8, 1932

Traits of the Superior Personality

By Edward S. Jones, *University of Buffalo*

What specific patterns of behavior characterize the personalities of men judged to be especially well adapted to executive work, selling, and teaching? Dr. Jones' answer to this question, based on fresh data, calls attention afresh to the responsibility of the college for training acceptable personalities as well as alert intellects.

Many college men have difficulty in getting placed in satisfactory positions after graduation because of poor personalities so-called. In an effort to analyze the significant traits which differentiate superior from inferior persons of approximately the same education and intelligence, ratings were made by personnel men in industry and advanced students in psychology of 145 men on each of 25 traits or modes of behavior. Although there is no great consistency among judges, eight of these traits tend to differentiate very distinctly persons who are considered "superior" from those considered "inferior" by the judges. No significant differences in important traits were found which set apart sales personalities from administrative personalities or teachers of merit.

MANY students graduating from college and being recommended for positions in business, industry, or teaching, as a matter of fact, are quite inferior in their social traits. Every personnel man knows such graduates. They are literally unable to "sell themselves." Occasionally one of them gets a job, but it is likely to be through pressure from the institution or through influence of relatives.

To see the extent and nature of this very practical problem, a careful survey was made at the University of Buffalo, in which three men cooperated in reviewing the background and the opportunities available for one hundred male graduates taken at random. While the three judges varied significantly, in the degree to which these students impressed them, there was perfect agreement that five out of the hundred had entirely "unsalable" personalities. They impressed no one favorably. Furthermore all five had had difficulty in getting positions. In fact three were known to be out of work two years after graduation. One had been lost track of entirely. With one exception their scholastic standing was good. They were not brilliant students, but all had passed with a safe margin. Their social reactions and gestures were at fault. Timidity, unpleasantness, or stubbornness were obvious.

In fifteen or sixteen cases out of the

hundred, at least two of the three judges agreed that the graduate man was seriously handicapped by his personality traits. In one respect or another most of these individuals will have difficulty in adapting themselves to positions for which they seem to be intellectually qualified but socially inadequate.

The problem is an acute one, as it concerns the purposes of college training. What is the use of giving a man elaborate training if he is unable to use it later on? At best some of these college men will find positions which are inferior to many held by high school students. Either the college should undertake to eliminate the unsocial individuals from its midst, or else it should be prepared to detect them and then to develop traits that will make them socially endurable.

What do we mean by superior personalities? Which traits are of greatest significance in industry? As a preliminary step in answering these questions a study was made in the city of Buffalo in which forty-four sales managers, executives, and personnel workers were interviewed. Each was asked to select five or six persons whom he knew quite well. Three of these were to be distinctly superior from the point of view of personality, successfully adjusting themselves socially as well as intellectually to their jobs; the other two or three were to be acquaintances who were handicapped because of poor personality. It was understood that the latter were not to be inferior intellectually to the first group, nor less well trained educationally; they were cases of personality deficiency or social mal-adjustment.

In all, 143 superior personalities and 88 inferior personalities were selected in this way by the 44 judges. Each of the successful personalities was designated as typically successful either in sales work, executive work, or in the instruction of others. In some cases, of course, there was overlapping. For example, 26 were characterized as typical and outstanding sales individuals, 63 as executive personalities, and 24 as teachers. Thirty were described as being successful in both sales and executive work.

After this initial selection and designation, an attempt was made to have each individual, superior and inferior alike, rated on a four-point scale in each of twenty common traits or modes of behavior often associated with leadership and superior personality. Distinct deficiency in a trait, so that the individual was clearly below the average of people in general, was scored with a minus sign, later interpreted as "−1." An average rating was marked and interpreted as zero. Ability somewhat above the average was indicated by a check, later converted to "+1." Distinct superiority or unusual ability was described by a double check, later "+2." On this basis each individual was scored and his mark for each trait averaged with others in the same category.

Table 1 gives the qualities listed for consideration with the averages obtained by superior personalities and inferior personalities. In parenthesis after each average is the probable error of the mean for the group. To the right is the ratio of the actual difference between means divided by the probable error of the difference. This

is usually taken to be the most significant index of the actual difference in averages. Hence, all of the traits have been arranged in the table in descending order according to this index. They were not in this order originally when rated by the different judges.

Seven of the traits appear to show a rather high degree of differentiation between superior and inferior personalities; another seven traits are

TABLE 1

Ratings on personality traits of superior and inferior groups

QUALITIES RATED	SUPERIORS		INFERIORS		DIFFERENCE
	Average	P.E.$_m$	Average	P.E.$_m$	P.E.$_{diff}$
Is sympathetic: easily appreciates some one else's difficulties	1.22	(.07)	.08	(.12)	8.2
Shows confidence in bearing and tone	1.41	(.05)	.31	(.13)	7.9
Cheerful and optimistic (continuous)	1.18	(.07)	.10	(.12)	7.7
Is very energetic—always doing	1.32	(.06)	.41	(.11)	7.3
Mixes socially with others. Joins clubs, etc. Knows many people	1.25	(.07)	.25	(.12)	7.2
Reads a great deal, studies to improve his information, etc	1.23	(.06)	.30	(.13)	6.6
Clever in repartee, retorting quickly to remarks of others	.96	(.07)	.14	(.11)	6.3
Fluent in conversation. Varied vocabulary, used easily	1.27	(.06)	.49	(.13)	5.4
Neat and careful about dress	1.38	(.06)	.70	(.12)	4.8
Has hearty laugh, showing relaxation, if not actually boisterous	.98	(.07)	.31	(.22)	4.8
Is natural easy listener. Raises questions and is attentive	.99	(.07)	.35	(.12)	4.6
Has several close and intimate friends; prefers deep friendships	1.00	(.05)	.51	(.10)	4.3
When right, sticks to his point; determined to prove it	1.27	(.07)	.67	(.13)	4.1
Smiles easily and frequently in conversing with others	1.03	(.07)	.47	(.12)	4.0
Quick to make complimentary remarks about others in their presence	.58	(.07)	.05	(.12)	3.8
Careful not to hurt another's feelings, or create a false impression	.83	(.08)	.35	(.12)	3.3
Collects jokes and stories; tries them out often	.53	(.08)	.05	(.12)	3.3
Is fond of "kidding;" enjoys trivial conversation	.58	(.08)	.33	(.14)	1.5
Is serious in all dealings with others. Every decision important	.81	(.08)	.60	(.13)	1.4
Naturally talkative, constantly expressing himself even when not invited	.11	(.08)	.47	(.13)	−2.5 (neg.)

fairly significant; six show unimportant differences.

In general the difference between sales and executive types of superior personalities was not significant. The most important differences were in the items of seriousness, talkativeness and tendency to joke. The executives were more serious by .5, whereas the salesmen were more talkative and more inclined to joke by about .6, or four times the probable error of the difference. It is noteworthy, however, that no one of these three traits stands out as highly important in differentiating superior from inferior personalities. All other differences were negligible and among these were the most important traits.

One is tempted to generalize, therefore, and say that in analyzing specific traits of superior sales and executive personalities there is no item of significant difference between them that is likely to determine their superiority over the average man. Among those characterized as teachers, differences were equally negligible, but it was obvious that teachers conformed more to the executive type than to the sales type. They were slightly deficient in cheerfulness, in passing of compliments, and in neatness, as compared with superior business personalities, but somewhat superior in a tendency to read, in fluency of conversation, and in indications of energy.

There was a striking difference in the ratings given by different raters. One rater showed that energy and fluency of conversation were to his mind the biggest factors in differentiating superior and inferior personalities. Another stressed sympathy and good listening ability. Naturally the study is open to the criticism of subjectivity.

One question of general significance is this: Is an inferior personality apparently unsuccessful, does he fail to make a good impression, because of a serious defect or two, or is it because he is generally colorless and not conspicuously good in any one trait? It is clear from the survey of the records of those who are rated as inferior personalities that there is no one type. However, it was rather noticeable that nearly half stood up pretty well in their average rating even in the more important traits. In nearly every case, however, one or two of the important traits (i.e. one of the first seven listed in the table) were rated with a minus.

This information would seem to furnish a clue for the correction of behavior traits or unsocial attitudes among college students. Is it not possible to set up situations whereby sympathy, confidence, cheerfulness, and other traits can be measured or at least rated by a number of teachers or fellow-students? When a student is found to be distinctly deficient, can we not concentrate upon him?

One illustration may serve to indicate what can be done. During his first three years in college one student was generally considered about as apathetic and unattractive socially as anyone could be. He was commented upon by professors as well as students. He did not coöperate in class discussions and in spite of a very high intelligence test score was only an average student. After much urging he reluctantly joined a fraternity during his junior year and entered vari-

ous activities. Fortunately, he was thrown with a man of unusual social poise and a wide following. By graduation he had improved greatly and was not difficult to place in a good position, whereas ordinarily he would have been considered impossible.

The concept of personality is extremely vague and capable of misuse. Instead of speaking in general terms, we should be ready to designate actual behavior elements that are really important in making up a superior man.

Manuscript received July 25, 1931

A Modern Trend In College Personnel Work

By G. H. Estabrooks, *Colgate University*

Individual differences in emotional stability and social effectiveness are quite as wide as the differences in mental calibre. Having recognized this principle, how can the college best discharge its responsibility for providing an education that is not exclusively intellectual?

College is now education for life in a democracy, not merely education of the intellect, but of the emotional and personal habits as well—the total personality. Through some scheme of individual contact students should be presented with a picture of those basic personality traits which are agreed upon as furthering success and happiness. This in no way involves standardization of personality or cramping of initiative. This education of emotional and habitual adjustments should be allotted ample time and not be confined to informal, non-required interviews or a brief course of lectures.

AN AUTHORITY on mental hygiene refers to a type of individual whose life is one continual contradiction between his ability and his accomplishment. Nowhere do we see this statement more clearly exemplified than in certain college students, intellectually gifted but tragically mal-adjusted. The student who is capable of work on the Phi Beta Kappa plane but fails to measure up for no apparent reason; the man whose brilliance is conceded by all, yet who has certain peculiarities of disposition which cause him to be universally avoided; the senior who graduates *summa cum laude* but finds that the world of business is quite unimpressed with his academic attainments and passes him by in favor of less gifted classmates.

The college placement officer has excellent opportunities to observe this state of affairs. Every year he is more or less responsible for a senior class. Probably more than half even in a liberal arts college desire to enter business or industry. Recruiters from firms of nation-wide reputation come to the campus. Strange to say, they are interested only to a minor extent in those outward evidences of college educational background, namely, grades. They seek other qualifications; only when assured of their presence will they consider the matter of academic standing.

Is it not possible that our institutions of higher education are sidestepping a very important issue? Historically, of course, they were for purely intellectual pursuits. Many

educators maintain that this is still their only function. Colleges are not feeding grounds for industry or business; neither are they interested in professional requirements except in so far as these are to be measured by grades in chemistry, mathematics, or economics. This stand certainly has its adherents, and historically the functions of a college could be described in just such terms.

We find, however, that these are very critical days for vested educational interests. President Eliot's adoption of the elective system was one of the early innovations based on recognition of shortcomings in the old college training. Now the process of reconstruction is under way on all sides. Swarthmore, Harvard, Chicago, Rollins, Wisconsin, Colgate, and Stephens are only a few of those institutions which are leading the way. The entire junior college movement is one of protest, while survey courses, tutorial systems, honors schools, final comprehensive examinations, outside examiners, and freshmen preceptors are no longer the fad but the fashion.

The keynote of education must be adjustment, or at least the ability to adjust. Unfortunately we have regarded this adjustment as largely an intellectual process, overlooking the fact that emotions and personal habits are quite as subject to training as is the intellect. Furthermore, adjustment in these fields is just as essential to success and happiness as is training in the strictly mental functions. If the educational system is to fulfill its real place in our social organization it must meet frankly this need for education of the entire personality rather than of one isolated section.

We are so steeped in our past that any suggestion of education as involving the entire individual so as to include emotional conditioning leaves the average college professor in a state of bewildered inquiry. Do we wish to convert the college into a sanitarium? Has not the student a perfect right to his own personality, even if it is studded with idiosyncrasies? What right has business or industry to dictate to us the matter of personality types? And finally have we not a "personnel" department whose duty it is to handle just such problems?

We do not wish to interfere unduly with the liberties of the average student and we have nothing but the highest praise for many college personnel departments. We simply wish a broader application of our educational concept. Education should be preparation for living and many, in fact most, lives are definitely handicapped by certain personality peculiarities. Emotional reactions are just as susceptible to modification as are those of the intellect and the task is one for our educational institutions—especially in this democracy.

Colleges are awakening to this new conception, the stimulus coming from two sources. One is external, namely the demands of the outside world. The other is to be found in the growing importance of personnel departments within the colleges. The work of these departments has largely been with "problem cases." The student who was obviously maladjusted was the chief object of attention. Then at such institutions as Smith and

Purdue we find a new note entering. Why confine attention only to the misfit? After all, adjustment is a relative term. The problem case forces itself on our attention, just as did the feeble-minded, monopolizes our time by the very insistence of its demands and may easily divert us from the really big issue, that of educating the normal and superior individual. Hence a tendency to use the personnel department as an instrument, not only to adjust the maladjusted, but also to increase the personality efficiency of the normal and supernormal student. Personnel work—mental hygiene if you wish, although the concepts are hardly synonymous—is to cover the *entire* student body and not a few dozen misfits.

It would seem that the personnel department of the university might easily arrive at the position of its brother in the business world. Here it is very difficult to determine a dividing line between personnel and general management, so thoroughly has the latter become imbued with the ideas of the former. Certain colleges, such as Antioch, now boast that every faculty member is a personnel man and is being trained continually to do this type of work. In other words we see indications that college instruction is slowly absorbing the personnel ideal and some day we will find it very difficult to draw a line between instruction and personnel work—between the education of the intellect and that of the entire personality.

Such an extension of personnel work in no way assumes that the entire student body is to be treated as a group of personality defectives. We would wish simply to instruct the boy or girl in what we may term "tool subjects" in so far as success and happiness are concerned. We would aim to have him look at obvious personality flaws and accept criticism in exactly the same way that he will criticize his play at football. Needless to say there are many students who are very well adjusted in their emotional lives; others who have good "average" personalities and many who are just "weak" without any outstanding flaws. We would be rendering a great service to all these cases and also fulfilling our true educational function if we could teach these individuals how to adjust on better and more efficient lines.

The objections to any such method of attack are numerous—but not vital. In the first place, what do we mean by a good personality? We immediately are faced with the charge of standardization, even if we could agree on a type. But we feel that such fears are groundless. We do not wish to standardize, nor do we desire to exalt one type of personality and have all colleges accept it as the final consummation of American civilization. We do say, however, that there are certain basic personality traits to which all can subscribe. We can construct a broad and acceptable foundation; the superstructure can vary as infinitely as New York architecture. Indeed, it should be the very essence of a liberal arts education to encourage independence of emotional reaction just as it strives to arrive at independence along intellectual lines.

Certain basic personality traits can

never interfere with success and happiness. Neither will they cramp originality or initiative. The intellectual qualities in the total picture we will not mention here. Physical health and vigor will never be a handicap in our present social order. Habits of dress have lost many a college senior the chance of a good business position, yet it is strange how many regard themselves as above reproach until defects are pointed out. Small matters of personal neatness are just as detrimental while crudity of manners can often be corrected without personal offence. These things are more or less obvious.

The college boy, I find, is very much at a loss as to other and less easily detected characteristics. He will admit that personality is of prime importance but so often he interprets this term to mean a weak, easy-going sociability acceptable to all. He seldom has it pointed out to him in terms of courage, energy, responsibility, cooperation, mastery of a subject, and ability to command respect. Even if he does see the value of certain qualities which he does not possess, very seldom indeed is he given an intelligent technique whereby he may eradicate the undesirable and install the desired personality trait. Too often it is a question of condoning a weakness hereditary by nature and unchangeable by nurture.

The entire question of personality integration here arises. The student is given no hierarchy of values. On the intellectual level he is presented with a number of isolated courses, or at best, under our modern tutorial systems his intellectual life alone is integrated around some one problem. But what of his social existence and his economic success? The educator in the liberal arts college may state that his training is cultural and is not designed to be vocational. He is quite justified in his stand, as far as it goes, but would it not be kinder to inform the student just *why* this stand is feasible? To the student college is preparation for life. He does not think very deeply on these matters. If it does not prepare him to earn a living then why waste four years? We believe the liberal arts education is not in any sense a waste. Why not take time to guide carefully the student's line of thought so that he will avoid this point of conflict?

This newer personnel work would be time consuming. Learned[1] proposes the equivalent of a three hour course during the Freshman year. Such a "course," but by an individual tutor, should contain a large element of vocational guidance or better, discovery. It should consider at length this entire matter of personality and any obvious defects possessed by the student should be brought to his attention.

It would be of great assistance to have the backing of the business world and of various professional organizations in presenting our picture. If ten or a dozen of our largest industrial organizations would give their stamp of approval to certain fundamental characteristics, arrange them in a

[1] W. S. Learned. Study of the Relations of Secondary and Higher Education in Pennsylvania. Twenty-fourth Annual Report of the Carnegie Foundation for the Advancement of Teaching.

tentative hierarchy as to importance and advocate this picture as one which they approved, it would carry great weight with the majority of our student body. A hearty seconding by the American Medical Association and the American Bar Association would help. Outside interests are altogether too willing to condemn the liberal arts college and suddenly become smitten with dumbness when asked for constructive and concrete suggestions. We need a personality picture backed by the body politic of our present day democracy. Such support would be far more telling than that of any religious sect, because of its universal and disinterested appeal.

Once given such a foundation, to what extent could we really modify student behavior? Any answer must be purely one of opinion for we have no basis on which to judge. Some would represent the left wing of pessimism, so to speak, but there is also a right wing and a center. Of one thing, however, we may be certain. We will make very little progress unless we devote to the problem an amount of time commensurate with its importance. Learned, as before stated, suggests that the student should perhaps be given time equal to a three hour course in the Freshman year; he also points out that the preceptors having say ten such men under their care should be excused part of the teaching load. This is an excellent and radical suggestion. Our own opinion is that such a "course" should extend through the entire four years of college—but this is obviously a matter of the distant future.

Finally, granted we can agree on a basic personality picture, and that the college administration will devote time and money worthy of such a project in personality adjustment, who is to "teach" the course? That is a serious problem. The "course" from its very nature would consist of individual work, thus bringing the tutorial idea down into the freshman year. It would consist of far more than the mere correction of personality difficulties. It would be also a course in life problems, for most of these difficulties are intimately linked with such problems. The preceptor would have to be an individual who could himself accept the ideal of a well balanced, adjusted personality and then guide his charge in this direction. He would need a grasp of educational psychology, vocational psychology, and mental hygiene, together with broad understanding of problems affecting the younger generation. Such individuals are rare—but perhaps we could educate them. Obviously the first requisite of any such broad concept of education is a personnel who can take the part of instructors. At present such a personnel simply does not exist. Whether we should confine this work to men with semiprofessional training or should regard it as more a function of every faculty man, as at Antioch, is another vexing question. It will be answered only by careful experimentation and observation.

SUMMARY

We would summarize briefly by saying that the college is now education for life in a democracy, irrespective of its former functions or of its

aims in other countries. The habitual and emotional life of the individual is just as subject to adjustment as is the intellect. It is also quite as important as regards future success and happiness. Education should be education of the entire personality along the lines of adjustment to our present day society. This extension of "personnel" work should include the entire student body. Through some scheme of individual contact such as that at Purdue[2] or that prepared by Learned[3] students should be presented with a picture of those basic personality traits which are agreed upon as furthering success and happiness. This in no way involves standardization of personality or cramping of initiative.

Furthermore this education of the emotional and habitual adjustments should be given ample time and not be confined to informal, non-required interviews or a brief course of lectures. Lack of qualified men to carry such a program is the great drawback to its adoption at the present time. When in force it should be extended to the entire student body, with the aim of "assisting the individual to do better those desirable or useful things that he is going to do anyway."

[2] A. Grant and F. D. McClusky. Studies in Higher Education at Purdue University. *School and Society*, 1927, 25: 725–6.

[3] Twenty-fourth Annual Report Carnegie Foundation for the Advancement of Teaching.

Manuscript received November 6, 1931

Legal Aspects of Personnel Administration in State Colleges

By M. M. Chambers, *Teachers College of Kansas City*

Familiarity with the points of law here presented will be of assistance to educational administrative officers who must frequently dispose of controversies involving the legal rights and obligations of members of the academic community.

Personnel problems in state universities and colleges have been dealt with in numerous decisions of the courts of last resort in various states and in Federal jurisdiction. The cases have involved such matters as admission, fees and deposits, housing, discipline, and dismissal of students; status, tenure, and compensation of professors and instructors; and selection and qualification of members of governing boards of institutions. While these cases reveal some variations in the policies of different states, they constitute a basis from which the progressive development of state educational policy will proceed.

THE rights and responsibilities of students, faculty members, and trustees or regents of state universities and colleges are defined to some extent in numerous decisions by the courts in various states. The cases collectively form a valuable source of the principles applied in this particular branch of administrative law, and an indispensable basis for the consideration of its future development. For convenience they may be grouped in a three-fold classification—those involving (1) students, (2) faculty members, and (3) the personnel of governing boards.

STUDENT PERSONNEL

Admission. The trustees of a state institution of higher education can not make membership in a Greek-letter fraternity a positive disqualification for admission as a student unless the legislature has expressly or impliedly authorized it.[1] Where a state university is given power by the constitution to make reasonable health regulations, it may make and enforce a compulsory vaccination rule, and deny admission to any persons otherwise qualified who refuse to comply with it, unless and until the legislature regulates the subject by a positive exercise of its plenary police power.[2] In the absence of constitu-

[1] State v. White, 82 Ind. 278, 42 Am. Rep. 496 (1882). As to the effect of an anti-fraternity statute, see Board of Trustees of University of Mississippi v. Waugh, 105 Miss. 623, 62 So. 827, L. R. A. 1915 D 588, 51 L. R. A. (N. S.) 17, affirmed in Waugh v. Trustees, 237 U. S. 589, 35 S. Ct. 720.

[2] Williams v. Wheeler, 23 Cal. Appl. 619,

tional or statutory prohibition, a state university may charge and collect an admission fee to provide a fund for incidental expenses necessary and convenient for the attainment of the objects of the institution, such as the heating and lighting of its public halls, not provided for at the expense of the state.[3] Where a statute provides that admission shall be free, collection of a fee for the use of the library, and the exclusion from the library of students who refuse to pay the fee, has been held unlawful.[4]

Miscellaneous Fees and Deposits. Exaction of deposits to cover possible negligent breakage or damage to university property, or for use of a prescribed uniform, such deposits to be returned at the end of the term or session if not consumed, is within the powers of the governing board, acting under a general legislative grant.[5] But the requirement of fees from all matriculants, to be applied to the support of the Y. M. C. A., Y. W. C. A., athletic associations, literary societies, and student publications, is beyond the powers of the governing board of a state institution.[6] In the absence of constitutional limitations, the state legislature has power to prescribe fees to be collected from all students for entrance, tuition, or incidental expenses, and may apply the proceeds to the erection and equipment of buildings on the campus.[7] The right of a state to charge higher fees to non-residents than are exacted from its own citizens who become students in its institutions of higher education is undisputed.[8] However, the ultimate soundness of the policy of discrimination against non-residents is open to question.[9]

Housing. The weight of judicial opinion favors the constitutionality of legislative acts authorizing the construction of dormitories and student activity buildings to be financed solely out of rentals accruing from the use thereof, on the amortization plan, and ultimately to become the property of the state upon the completion of the payment of all contract charges for construction and equipment.[10] A fraternity chapter has been held to be primarily an organization for the rooming and boarding of students,

138 Pac. 937 (1913); Wallace v. Regents of University of California, (Cal. App.) 242 Pac. 892 (1925).

[3] State ex rel. Priest v. Regents of University of Wisconsin, 54 Wis. 159 (1882).

[4] State ex rel. Little v. Regents of University of Kansas, 55 Kan. 389, 40 Pac. 656, 29 L. R. A. 378 (1895).

[5] Davidson-Nicholson Co. v. Pound, 147 Ga. 447, 94 S. E. 560 (1917).

[6] Connell v. Gray, 33 Okla. 591, 127 Pac. 417, Ann. Cas. 1914 B 399, 42 L. R. A. (N. S.) 336 (1912).

[7] Litchman v. Shannon, 90 Wash. 186, 155 Pac. 783 (1916).

[8] Bryan v. Regents of University of California, 188 Cal. 559, 205 Pac. 1071. (1922).

[9] See Spencer, Carlson E., The Legal Aspects of the Non-Resident Tuition Fee. 6 *Oregon Law Review* 332 (June, 1927); also published concurrently in 33 *West Virginia Law Quarterly* 350.

[10] McClain v. Regents of University of Oregon, 265 Pac. 412 (1928); Loomis v. Callahan (Wis.) 220 N. W. 816 (1928); Wilder v. Murphy, 56 N. D. 436, 218 N. W. 156 (1928); State v. Davis (N. D.) 229 N. W. 105 (1930). See Viesselman, P. W., and Bergenthal, C., "Private Financing of State University Buildings." 2 *Dakota Law Review* 288 (December, 1928).

and not entitled to exemption from taxation as a scientific, literary, or educational institution, unless a statute expressly and unequivocally exempts it.[11] It has been held that even if the donation of a building to a state university creates a trust limiting its use to the rooming and boarding of students, continuous use of it for the designated purpose for thirty-six years would constitute full performance of the trust, and the governing board would then be entitled to convert it to another use for educational purposes.[12] An occupant of a room in a college dormitory has not the legal rights of an ordinary tenant of real property, nor even those of a lodger; and by taking up residence there he impliedly agrees to conform to all reasonable rules and regulations then in force or thereafter adopted by the proper authorities, who may, when the circumstances make it reasonably necessary, expel him therefrom summarily.[13]

Liability for Injuries to Students. The state has no liability for injuries to students resulting from the negligence of employees of a state institution, unless it voluntarily assumes such liability, which it may do by legislative act, in the absence of any constitutional prohibition.[14] An infirmary or hospital conducted in connection with a state university, even though fees be charged and profits made from the sale of its services, is classified as a purely public or governmental activity, in which the governing board is not responsible for the torts of its employees, and students negligently injured thereby are remediless except as against the person responsible for the injury.[15]

Discipline and Dismissal. The courts will not interfere with the reasonable exercise of disciplinary authority by university or college officers in the absence of any evidence that it is exercised arbitrarily, fraudulently, in bad faith, or with malice.[16] The president of the institution may enforce proper administrative regulations enacted by the governing board, including those designed to promote and protect a decent standard of moral and social conduct among students, to the extent of suspending or expelling offenders for the good of the institution.[17] The relation between the institution and a matricu-

[11] Inhabitants of Orono v. Sigma Alpha Epsilon Society (Maine), 74 Alt. 19 (1909). See Chamberlain, Vell B., "Tax Exemption of Greek-Letter Fraternities." 4 *Cincinnati Law Review* 186 (March, 1930); and Tuttrus, R. R., "Eligibility of Fraternities to Exemption from the Property Tax under Wisconsin Statutes." 4 *Wisconsin Law Review* 223 (1927).

[12] Splawn v. Woodward (Tex. Civ. App.), 287 S. W. 677 (1927).

[13] Englehart v. Serena (Mo.), 300 S. W. 268 (1927).

[14] Mills v. Stewart, (Mont.), 247 Pac. 332 (1926).

[15] Davie v. Regents of University of California, (Cal. App.), 227 Pac. 243 (1924).

[16] See Sloan, George E., "Discipline and State-Owned Educational Institutions" 97 *Central Law Journal* 187; Hurley, James D., "Colleges: Nature of Relation to Student: Right of Dismissal" 13 *Cornell Law Quarterly* 85 (December, 1927); Pennypacker, Isaac A., "Mandamus to Restore Academic Privileges" 12 *Virginia Law Review* 645 (June, 1926).

[17] State ex rel. Ingersoll v. Clapp, 81 Mont. 200, 263 Pac. 433 (1928), certiorari denied 48 S. Ct. 528, 277 U. S. 591, writ of error refused 49 S. Ct. 7.

lated student is contractual, and the law will protect the student against arbitrary dismissal.[18] In cases of suspension or expulsion, the accused student is entitled to a hearing before the administrative authorities of the institution, but such hearing need not possess all the formal characteristics of a court proceeding.[19] If the student is fully apprised of the information against him, and given ample opportunity to explain his conduct, this constitutes a sufficient hearing, without such formalities as filing written charges, summoning of witnesses to give sworn testimony, and giving to the accused the privilege of confronting all witnesses against him and of hearing their testimony in person and of cross-examining them.[20] Although the law does not require a hearing as formal as a court proceeding, administrative officers may avoid needless litigation by handling suspension and expulsion cases with due regard for the rights and feelings of all concerned, and with especial care to forestall the allegation of condemnation upon mere suspicion, or upon insufficient evidence, or after a proceeding too informal even to meet the minimum requirements of the law as above outlined.[21]

FACULTY PERSONNEL

Status and Tenure. Professors in state universities and colleges are not public officers, but employees of public corporations, with rights and duties derived from the contract which is the basis of their employment.[22] Professorial tenure is made insecure in many state institutions by statutes of the state or ordinances of the governing board making professors removable at the pleasure of the board, or whenever the board determines that the interests of the institution require it.[23] Where a statute empowered the governing board to remove any professor without previous notice whenever in its judgment the interests of the university required it, one line of judicial opinion holds that the board was without power to contract with an instructor that his separation from the service at the instance of either party would be preceded by three months' notice.[24] Another and seemingly better line of judicial reasoning holds that under a similar statute the board can make such a covenant with an instructor without impairing its power to dismiss him without notice, but thereby renders itself liable for the amount of his salary for three months if it exercises its power to disregard the covenant and dismiss him without notice.[25]

[18] Goldstein v. New York University, 76 App. Div. 80, 78 N. Y. S. 739 (1903).

[19] Woods v. Simpson, 146 Md. 547, 126 Atl. 882, 39 A. L. R. 1016 (1924).

[20] Tanton v. McKenney, 226 Mich. 245, 197 N. W. 510, 33 A. L. R. 1175 (1924).

[21] Dissenting opinion of Mr. Justice Galen in State ex rel. Ingersoll v. Clapp, 81 Mont. 200, 263 Pac. 433 (1928).

[22] Butler v. Regents, 32 Wis. 124 (1873); Hartigan v. Regents, 49 W. Va. 14, 38 S. E. 698 (1901). *Contra*, Head v. Curators of University of Missouri, 47 Mo. 220 (1871); Vincenheller v. Reagan, 69 Ark. 460, 64 S. W. 278 (1901), Mr. Chief Justice Bunn dissenting.

[23] University of Mississippi v. Deister, 76 So. 526, 115 Miss. 469 (1917); Hyslop v. Regents of University of Idaho, 23 Ida. 341, 129 Pac. 1073 (1913).

[24] Devol v. Regents of University of Arizona, 6 Ariz. 259, 56 Pac. 737 (1899).

[25] Kansas State Agricultural College v. Mudge, 21 Kan. 223 (1878).

Where a statute empowers the board to appoint and remove professors without limitation as to time, it has been held that a contract employing a professor for two and one-half years was not for an unreasonably long period of tenure.[26]

Compensation. A state university teacher's right to his pay is governed by the well-established principles of the law of contracts, except as modified by statute.[27] Employment of a professor for a "year" has been held to mean the traditional academic year and not a full calendar year, in the absence of evidence of any understanding to the contrary, and the fact that the professor spent the summer in the employ of another university did not impair his right to recover his full salary for the year.[28] Professors engaging in extra-mural activities to supplement their incomes are within their rights unless the contract of employment forbids such activities, so long as they do not compete with the institution by which they are employed, or act in opposition to its interests.[29]

THE PERSONNEL OF THE GOVERNING BOARD

Selection and Tenure. Where the constitution requires that members of the governing board be elected by the people of the state, and a statute adds an elective state officer to the board as an ex officio member thereof, such elective state officer, having been elected prior to the enactment of the statute, is not entitled to a seat on the board during his current term, because such seat could not have been contemplated as an incident of his office when he was elected.[30] It has been held by a division of the court that where a newly enacted statute provides for appointment of members of the governing board by the governor of the state with the advice and consent of the senate, such appointments are not irregular merely because the governor sent the names of his nominees to the senate for confirmation before the statute was passed.[31] When the constitution or statutes provide a fixed term of office for members of the governing board, and contain no "hold-over clause" specifying that they shall continue in office until their successors shall be appointed and qualified, their tenure terminates upon the expiration of the fixed term, even though this occur at a time (as when the senate is not in session) when regular appointments of their successors cannot be made in the manner prescribed by law.[32]

Manner of Removal. In the absence of constitutional limitations, the power of the legislature to prescribe by statute the method of removing

[26] Ward v. Regents of Kansas State Agricultural College, 138 Pac. 372, 70 C. C. A. 512 (1905).

[27] Trustees of University of Alabama v. Walden, 15 Ala. 655 (1894).

[28] Trustees of University of Illinois v. Bruner, 66 Ill. App. 665, affirmed 175 Ill. 307, 51 N. E. 687 (1898).

[29] 11 *Corpus Juris* 996, citing cases.

[30] State ex rel. Mack v. Torreyson, Attorney-General, (Nevada), 34 Pac. 870 (1893).

[31] State ex rel. Langer v. Crawford, 36 N. D. 385, 162 N. W. 710 (1917).

[32] State ex rel. Wood v. Sheldon, 8 S. D. 525, 67 N. W. 613 (1896); State ex rel. Langer v. Scow (N. D.), 164 N. W. 939 (1917). For the effect of a "hold-over clause," see State ex rel. Little v. Foster (Ala.), 30 So. 477 (1901).

members of governing boards is complete, and it may provide for their summary removal without notice or hearing; but where the statutes give to some administrative authority the power to remove, not at pleasure nor at its discretion, but for cause, and are silent as to the procedure to be followed, a specification of the charges, notice, and opportunity to be heard are essential.[33] In the absence of statutory provision for the termination of his tenure by mere neglect or abuse, or by some expressly prescribed method of removal (which may be summary), a member of the governing board cannot be deprived of his seat until the authority competent to remove him has given him reasonable notice and opportunity for hearing, investigated the facts, and determined his forfeiture of right to the office.[34] The power of removal is not a necessary incident of a limited power of appointment which the legislature has conferred upon the governor of the state.[35] It has been held that where a statute empowers the governor to remove members of the governing board whenever he is satisfied that they have been guilty of misconduct or malfeasance in office or are incompetent, and directs that he shall file with the secretary of state a statement showing his reasons with his order of removal, such statement is sufficient if it merely states his conclusions, omitting any mention of the specific facts on which they are based.[36] In this instance a minority of the court opposed the decision both on grounds of law and of policy, and marshalled cogent reasoning and imposing authority in support of its dissenting position.[37]

The increasing importance of public higher education affords an impetus to the study of the personnel problems which arise in its administration. Much remains to be done toward building an adequate body of knowledge to serve as a basis for wise legislation, constructive modification of judicial precedents, and the development of sound administrative policies.

Manuscript received December 19, 1931

[33] State ex rel. Hitchcock v. Hewitt et al., 3 S. D. 187, 52 N. W. 875, 44 Am. S. R. 788, 16 L. R. A. 413 (1892).

[34] State ex rel. Linley v. Bryce, 7 Oh. St. (pt. II) 82 (1836).

[35] Lewis v. Whitle, 77 Va. 415 (1883).

[36] State ex rel. Davis v. Johns, (Wash.), 248 Pac. 423 (1926).

[37] See the dissenting opinion in the preceding case, written by Askren, J., and concurred in by Main and Bridges, JJ., especially the quotation therein from Hoffman v. Yoe, 9 Kan. App. 394, 58 Pac. 802, reversed in Yoe v. Hoffman, McDowell v. Limbocker, 61 Kan. 265, 59 Pac. 351 (1899).

Validating Measures of Interest[1]

With Particular Reference to Group Interest Scales

By Douglas Fryer, *New York University*

There is pressing need of dependable scales for measuring a person's likes and dislikes in a way which discloses the extent to which his interests parallel the interests of members of various groups—practicing lawyers, mechanics, musicians, teachers, mathematicians. But before reliance can be placed on the dependability of any such measure, we must test the validity of the instrument in differentiating the interests typical of the group. This is the problem here analyzed and illustrated by Dr. Fryer, author of the recent volume on "Measurement of Interests."

For validating scales designed to measure interests characteristic of a group, five methods are compared: (1) validation with control samples; (2) validation in selection of the sample; (3) validation by indicating group differences in interests; (4) validation with extraneous criteria; (5) validation through use. Results of the theoretical validation of such interest scales are summarized.

INTEREST measures are separated into tests of objective reactions and inventories of subjective estimates. We shall consider in this paper only the problem of validation of interest scales prepared for scoring the subjective interest inventory of members of a group.

Interest measurement, as it is at present conceived, depends upon the existence of group organizations of interests. In the development of scoring keys, or group interest scales, the individuals of a specialized group of people estimate whether they like or dislike the objects and activities listed in the interest inventory. Social intercourse over a considerable period of time in such a specialized group of people is the generally accepted criterion in the selection of interest group samples. The estimates of the special group are contrasted with those of a general group of people and the distinguishing interests (whether likes or dislikes) form the interest scale. Weights are often used to indicate the extent of the differences between the special and general groups.

Two questions must be answered before the group interest scales can be applied with any measure of authority. Do group interests exist with

[1] Paper presented before the Seventh International Conference of Psycho-technics held at Moscow in September 1931.

sufficient homogeneity for measurement purposes? If this question is answered in the affirmative for a specialized group then the second question arises: Are the distinguishing interests, which are included in the group interest scale, representative of the interests of the specialized group generally? The latter question is one of validity of the measure and the former is one of the existence of group interests.

Several methods have been developed in the researches of various investigators in answer to these questions. Usually both have been dealt with together. The control sample technique is applied most extensively. There are attempts at validation in the selection of the sample. Validation has also proceeded along lines of indicating group differences. Correlation with extraneous criteria is used occasionally as a method of validation. The final validation of any psychological measure is, of course, in the practical knowledge gained of it through use. These five procedures will be discussed and illustrations drawn of their use by various investigators.

VALIDATION WITH CONTROL SAMPLES

In control sample technique the interest scale, or scoring key, which has been established upon a primary sample of subjects, is tested by application to a control sample of new subjects, who are, of course, selected with the use of the same criterion as that applied in the selection of the primary sample. In this manner it is possible to discover whether the group scale will separate other samples of the specialized group from people in general as well as it differentiates the primary sample. Several control samples are often used in making this test.

A number of investigators have offered distributions of interests scores of the primary sample as a validation of the interest scale. This is argument in a circle. If we assume that any group of people have some interests which distinguish them from other people these can be formed into an interest scale. When the interest scale is applied to the inventories of the same group for scoring, the same interests will be found to be present as are in the interest scale. Any correlation between the criterion of selection and the scores which is other than perfect, will be due to errors in the method. By way of illustration, Kornhauser[2] devised an interest scale for the separation of educational ability groups. He applied the interest scale to the inventories of a group of students, half of which was composed of those individuals forming the primary sample upon which the scale was devised. The correlation of scores with the criterion of selection was .52. But it was .73 for the primary sample; and it was .17 for the remainder of the total group, which might be considered as a control sample. In analogous situations in interest measurement some investigators have accepted the .73 as a validity coefficient and others the .52, while the true validity of the interest scale is indicated by the coefficient of .17.

The samples used by Kornhauser

[2] A. W. Kornhauser. Results from a Quantitative Questionnaire on Likes and Dislikes Used with a Group of College Freshmen. *J. of App. Psychol.*, 1927, XI, 85-94.

were small: 45 for the primary sample and 65 additional subjects to form the total group. The proportion of the primary sample composing the control group is a factor determining the correlation. This is illustrated in the work of Jacobsen[3] in the same field of ability group interests as Kornhauser's. A control sample of 200, including 67 subjects from the primary sample, offered a correlation with the criterion of selection of .48, while with an entirely new control sample of 232 subjects the correlation with the criterion becomes .22. Again, Jacobsen used 114 subjects of a primary sample as a part of a control sample of 425 subjects and secured a correlation with the criterion of selection of .44. This correlation is reduced to .32 and .29 when two entirely new control samples of 304 and 250 subjects were used.

This illustrates the point that the inclusion of subjects in the control sample who were used in the primary sample for the preparation of the interest scale tends to raise the correlation with criteria. In the cases cited above the specialized groups investigated are not highly homogeneous in interests and they serve even more because of this fact to illustrate the need of the control sample technique in all preliminary investigations in interest measurement.

Illustrations of differences to expect between distributions of subjects from primary and control samples are present in the work of Freyd,[4] who investigated social-mechanical interest groups; of Cowdery,[5] who investigated occupational interest groups; and Garretson,[6] who investigated educational interest groups. Freyd found 90 per cent of the mechanical and 93 per cent of the social subjects of the primary sample selected correctly by the interest scale. For the control group, however, only 57 per cent and 75 per cent respectively were correctly selected. In dealing with three professional groups, Cowdery found that 99 per cent of the medical men, 96 per cent of the engineers, and 94 per cent of the lawyers composing the primary sample are correctly classified by the interest scales for these occupations. But this selection is reduced to 71 per cent for the medical men, 73 per cent for the engineers, and 61 per cent for the lawyers when the occupational interest scales are applied to control groups. Garretson investigated the interests of three secondary educational groups: academic, commercial, and technical. While the distributions for the primary sample are not published, those for the control sample, showing 55 per cent of the commercial subjects correctly classified by the interest scale, 43 per cent of the academic subjects, and 60 per cent of the

[3] M. M. Jacobsen. *The Quantitative Determination of Scholastic Interests Among College Students.* Unpublished Ph.D. Dissertation, University of Minnesota Library, 1928, 181 pp.

[4] Max Freyd. The Personalities of the Socially and Mechanically Inclined. *Psychol. Mono.*, 1924, *33*, Whole Number 151, 101 pp.

[5] K. M. Cowdery. Measurement of Professional Attitudes. Differences between Lawyers, Physicians and Engineers. *J. of Pers. Res.*, 1926–27, V, 131–141.

[6] O. K. Garretson. Relationships Between Expressed Preferences and Curriculum Abilities of Ninth Grade Boys. *T. C. Columbia University, Cont. to Educ.*, No. 396, 1930, 77 pp.

technical subjects, indicate that a considerable reduction in differentiation is again present.

VALIDATION IN SELECTION OF THE SAMPLE

The use of the control sample technique is related to another technique which would seem to obviate its use after the existence of the specialized interest group has been established. This is validation in selection of the sample. In all the early researches the numbers of cases forming the primary sample for use in devising the interest scale are very small. In Freyd's researches the primary sample totaled 30 mechanically and 29 socially interested persons. In Cowdery's researches the primary sample was composed of 34 doctors, 37 engineers, and 34 lawyers. In his preliminary investigation, Strong[7] used what was then considered very large primary samples, ranging in size from 26 to 100 subjects and with a median of 73. In his present investigation Strong[8] has used primary samples of occupational groups ranging in size from 99 to 552 subjects and with a median of 130. Strong says in this connection, however, that samples of 250 subjects are more likely to be representative of the interests of the occupation generally and he thinks, to achieve the highest validity for the interest scale, that it should be based upon a sample of approximately 500. The reasoning that, through using large representative group samples, the validation of the interest scales is automatically handled, is sound; proof of its soundness is found in Manson's[9] recent investigation into the interests of women's occupational groups. Occupational samples of 250, or 500 subjects were used for all the ten occupational interest scales prepared. In validating each of these interests scales Manson selected 50 subjects from the primary sample and 50 new subjects. There is very little difference between the old and new cases in the selection made by the interest scale of those belonging to the occupation for which it was prepared. This fact would suggest that further validation of interest scales is unnecessary if the primary sample includes a total for each interest group contained there of 250 or more cases. But to make this statement positively is premature. Determination of the existence of interest groups, upon which a great deal of the present research is now concentrated, can only be done by some form of the control group technique.

VALIDATION BY INDICATING GROUP DIFFERENCES IN INTERESTS

It is possible to score various occupational groups with the interest scale of one specialized group and to observe the differences between groups and the extent to which other groups have the interests of the specialized group for which the scoring is done. Reversing this procedure, one occupational group can be scored with various occupa-

[7] E. K. Strong, Jr., An Interest Test for Personnel Managers. *J. Pers. Res.*, 1926–27, V, 194–203.

[8] From correspondence with E. K. Strong, Jr., Stanford University, California.

[9] G. E. Manson. Occupational Interests and Personality Requirements of Women in Business and the Professions. *Michigan Business Series*, III No. 3, 1931, 282–409.

tional interest scales to observe the extent to which it possesses the interests of other groups. By way of illustration, Strong[10] found that 28 per cent of the general group used for comparison with the preferences of the primary sample of personnel managers fell within the range of scores of the personnel managers. More than 44 per cent of the lawyers and advertising men, but less than 15 per cent of the store salesmen, bankers, and artists of the general group fell within the range of personnel managers. Also when personnel managers were scored with the interest scales of other specialized occupational groups, they were found to have the interests of other occupations in like proportions to these other occupations having the interests of personnel managers. This is the reverse process. Sixty per cent of the personnel managers fell within the distribution of advertising men's scores and 50 per cent within the distribution of lawyers' scores. But less than 34 per cent were within the range of scores of store salesmen, bankers, and artists. Hoff[11] used the same method of showing interest differences among women's occupational groups. She found that, while 37 per cent of the general group forming the primary sample for preparation of interest scales were overlapping the distribution of teachers when scored for teacher's interests, housewives and stenographers of the general group overlapped about 50 per cent and business women and authors about 25 per cent.

The procedure in these investigations has been to show the interest differences between the specialized occupational groups composing the general group. The general group was used earlier for comparison in the preparation of interest scales. Hence the specialized groups composing the general group have already cast an influence in the formation of any interest scale, and group differences shown to exist in the use of an interest scale might be ascribed to the method of its preparation and not be inherent in the interests of groups. While this is unlikely where large samples are used, Manson[12] has removed this influence in her work upon women's occupational groups by using entirely new samples and scoring them with various occupational interest scales to observe the differences between groups. By way of illustration, she finds that 84 per cent (average) of women treasurers, cashiers, and tellers overlap the distribution of clerical workers when scored with the clerical workers' interest scales. But women partners in retail stores show a greater difference with 66 per cent overlapping the clerical workers. When scored with the teachers' interest scales 76 per cent (average) of school principals and librarians overlap the distribution of teachers, while women executives show a slightly smaller overlapping of 65 per cent.

[10] E. K. Strong, Jr. An Interest Test for Personnel Managers, *J. of Pers. Res.*, 1926–27, V, 194–203; Interest Analysis of Personnel Managers, *J. of Pers.* Res., 1926–27, V, 235–42.

[11] M. I. Hogg. Occupational Interests of Women. *Pers. J.*, 1927–28, VI, 331–7.

[12] G. E. Manson. Occupational Interests and Personality Requirements of Women in Business and the Professions. *Michigan Business Series, III*, No. 3, 1931, 282–409.

The differences between interest groups is sometimes shown by correlations between the scores of an occupational group when scored with two occupational interest scales. This is illustrated again in the work of Strong.[13] Scores for 63 civil engineers in general and various branches of engineering intercorrelate .92 (average), indicating very little difference in interests between these various specialized groups of engineers. On the other hand scores in the interest scales of these various groups of engineers correlate .25 (average) with scores in the public accounting interest scale, indicating a very great difference between the interests of engineers and public accountants. Strong finds that scores of physicians in physicians' and artists' interests correlate .76, while in physicians' and farmers' interests only .41; that scores of lawyers in lawyers' and journalists' interests correlate .83, while in laywer's and life insurance salesmen's interests only .31, and so on. It is in this way that interest differences between groups are established, which is a part of the process of validating the interest scales.

VALIDATION WITH EXTRANEOUS CRITERIA

Practically all ability measures have received their validation by comparison of scores with criteria which are extraneous to the measurement, but which common sense tells us are expressions of the abilities that concern us. The criteria used in the early validation of intelligence tests were estimates of intelligence. Various measures of efficiency are used in validating special ability tests. The validation of interest measures might have proceeded along similar lines if the standards of measurement were individual interests instead of group interests.

A few investigators have made use of extraneous criteria to indicate the validity of interest scales. Hubbard[14] used various mechanical criteria, such as mechanical operations, tools owned, fathers' ratings on a mechanical occupational scale, things done, mechanical occupational preferences, and so on, with which to correlate scores in her mechanical interest scale. The correlations with all these extraneous criteria were negligible, with the exception of that with mechanical operations which was .30. Hubbard also divided occupational choices into those with and without mechanical interests and correlated this criterion of mechanical interests with high and low scores in the mechanical interest scale. A correlation of .73 was found. Strong[15] used the occupational plans of students for comparison with ratings upon various occupational interest scales and found a 63 per cent agreement. A follow-up of the same group two years later showed a 67 per cent

[13] E. K. Strong, Jr. Interests of Engineers. A. Basis for Vocational Guidance, *Pers. J.*, 1929–30, VII, 441–54: *Manual for Vocational Interest Blank*, Stanford University Press, 1930, 11 pp.

[14] R. M. Hubbard. Measurement of Mechanical Interests. *Ped. Sem. and J. of Genetic Psychol., 1928, 35, 229–254.*

[15] E. K. Strong, Jr. Diagnostic Value of Vocational Interest Test. *Educ. Record.* 1929, X, 59–68; Interests of Engineers. A Basis for Vocational Guidance. *Pers. J.*, 1928–29, VII, 441–454; *Manual for Vocational Interest Test.* Standford Univ. Press, 1930, 11 pp.

agreement. Strong has also used college professional majors as an extraneous criterion and found that 86 per cent of student majors in law rate high on the lawyers' interest scale and only 37 per cent of majors in other professional fields do so.

While it is true that the extraneous criteria, such as have been widely used in the validation of ability measures, have not found wide application in the field of interest measurement, this is largely due to the nature of the interest scales and the group criterion used in devising them. It is also due to the fact that better methods of validation, which have already been discussed, are applicable to the validation of interest scales.

VALIDATION THROUGH USE

With the limited theoretical validation that can be given any psychological measure the true value of such a measure only becomes apparent through use. This has been true in the field of ability measurement and there is no reason for an exception in the field of interest measurement. Group interest scales are now entering a period of validation through use. Their theoretical validation has indicated a number of probabilities and the practical value of the scales must now be determined in relation to human adjustment.

RESULTS OF THE THEORETICAL VALIDATION OF INTEREST SCALES

Thus far we have been concerned with the methods of validation of the group interest scales. I will now speak briefly of the results of validation.

At present it seems justifiable to conclude that occupational interest scales are, from theoretical evidence, valid. There are occupational interest groups, and scales have been prepared which measure the interests of these groups. The investigations of Cowdery and Strong for men's occupations and of Manson for women's occupations are largely responsible for this achievement. The number of homogeneous interest groups in the occupational field is still unknown, although our knowledge is being extended rapidly. Also, it seems quite probable that educational interest groups exist and that interest scales can be prepared to measure the interests of some of these groups, thanks to the work of Garretson. But educational appear to be less homogeneous than occupational interest groups. So much can be said upon the positive side of this development of scales.

In the field of social groups generally, such as racial and national groups, fraternity groups, secret organizations, political units, and so on, little is known of the organization of group interests. It is possible that to some extent certain of these groups are fairly homogeneous in interests, but further research will have to determine this fact. In the field of educational ability groups extensive research has been carried on by Paterson and Jacobsen. While interest scales have been prepared for educational ability groups their validation does not indicate that such groups are very homogeneous in interests. The work of

Ream[16] indicates that the same situation exists for sales ability groups. The assumptions seem to be sound that interest groups cross all levels of abilities; and that, while occasionally a specialized ability group may be sufficiently homogeneous in interests to distinguish it from another specialized group, ability groupings are not the significant criterion of interest connections. It is also pretty clearly demonstrated by Freyd's work that there is little homogeneity generally in social-mechanical interests, and by Hubbard's work that mechanical interests do not have their connections in mechanical ability groupings.

The work of validation of group interest scales shows promising leads. Many occupational and educational group scales are available for practical trial by industrial psychologists and vocational counselors. Much negative work has been done that need not be repeated. The existence of interest groups has been demonstrated and the method of measurement has been established. Interest measurement, it would seem, has come to stay. As a valid psychological measure, it is taking a place along with its older and more mature sister, the measurement of abilities.

[16] M. J. Ream. *Ability to Sell. Its Relation to Certain Aspects of Personality and and Experience.* Baltimore, 1924, 64 pp.

Manuscript received November 12, 1931

Measuring Drivers' Reactions

By T. W. Forbes, *New York Psychiatric Institute**

A good automobile driver, according to Dr. Forbes' analysis, is one who can reliably estimate the speed and distance of an approaching car, and who has the foresight to anticipate what a changing situation is going to be like a few seconds hence. Moreover, he is not apt to get excited or confused, and do the wrong thing.

Two methods were employed for testing the ability of automobile drivers experimentally. The first used a fairly elaborate apparatus which presented in miniature in the laboratory the conditions of driving through traffic, while the second involved judgments of speed on a strip of road.

Thirty-one commercial drivers and fifty university students were tested. With the former, the apparatus differentiated drivers with good accident records from those with poor records, while the road test showed many errors in estimation of speed large enough to be of importance.

The apparatus preserves an actual driving situation in the laboratory. The results indicate that by increasing its complexity, the value of the test could be enhanced, thus adapting it for purposes of selecting drivers and, perhaps, of diagnosing driving difficulties.

VARIOUS tests for drivers and motormen have been devised but to the best of the writer's knowledge, in none has the total situation been kept comparable to that on the road. This would necessitate visually perceived speeds proportional to those in driving, control by the driver of his own speed, steering, and passing of cars, and actual collisions in case of wrong reactions. McCarter's revision of Viteles' test for motormen[1] comes close to satisfying the conditions in that speed control and collisions are involved. It does not, however, pretend to preserve proportions; the motorman looks down on tracks on a table and no attempt is made to keep the total situation closely analogous to the actual situation on the road.

It seemed that the more nearly the total situation could be kept like that on the road, the more likely the driver would be to react as he does in actual driving. An apparatus was therefore designed to preserve proportions as nearly as possible, and involve speed

* The study was made at the Ohio State University psychological laboratory.

[1] M. S. Viteles, Research in Selection of Motormen, Part II. *Jour. Person. Res.*, 1925, 4, 173–199.

Revised model by McCarter in use by Cleveland Municipal Railway Company, Cleveland, Ohio. See footnote 8.

control, passing of cars as if on the road, and actual collisions in case of misjudgment. Thirty-one commercial drivers[2] and fifty university students were tested with the result that statistically significant differentiation was obtained between a group with poor accident records and a group having good records.

A road test of judgment of speed was also used with the fifty university students.

APPARATUS

The general scheme was to put the driver in a situation similar to that in driving down a road where he would pass cars going in his own direction and at the same time have to avoid other cars travelling in the opposite direction. Cars and roadway were reduced to scale. Speeds were kept proportional to those met in driving. Comparison with extraneous objects was eliminated by curtains.

The driver's own car was represented by a stationary wooden dummy car about six inches long, at one end of the miniature roadway. This car carried bumpers and a cardboard cab in the front of which was a windshield-like opening covered with celluloid. The cab was mounted at the level of the driver's eyes so that he looked through the windshield to the road, which was also practically at eye level (driver seated). The dummy car actually passed miniature cars moving towards it on the left of the roadway and overtook cars moving ahead on the road in the right-hand lane. In case the driver misjudged and collided, the bumpers on the dummy engaged the oncoming or overtaken car and caused the whole mounting of the dummy car to fly under spring tension back and up toward the driver.

This release of the mounting served to avoid damage to the apparatus and also to impress the driver with the fact that something had actually collided when he misjudged. Such a factor is very important in imparting a tone of realness to the whole situation.

The impression of motion over the road was obtained by moving the road, a six inch canvass belt, under the dummy car. The miniature cars moving in opposite directions with the belt stationary, were then geared in such a way that their speed *relative to the road* remained constant no matter how the speed of the latter varied. Thus the driver, by controlling the speed of the belt, could produce the same effect as if he were controlling his own speed over the road, while the speed of traffic remained independent of his control. He also "steered" the dummy car from right to left as one would steer on the road.

Since each test period, three trials of five minutes each, involved the passing of from ninety to one hundred and fifty cars going in the driver's own direction, the set-up represented a sample of fairly heavy traffic.

The miniature cars were mounted on $\frac{1}{4}$ inch endless steel ribbons and were driven, as was the canvas belt, by electric motors. Details have already been published[3] and will not be given more minutely here.

[2] Through the kind co-operation of the Safety Council and member companies in an Ohio city.

[3] T. W. Forbes. Judgment of Velocity in Connection with Highway Safety. *Ohio State University Contrib. in Psychol*, 1930, number 11, 73–78.

The realness of the driving attitude engendered was proved by reports of the majority of those tested. One of the most skeptical of the commercial drivers remarked after being tested, "By—, I came to feel almost as if I was driving a car."

A practice period of one minute was allowed before starting the test. In cases where the driver operated the apparatus as if he did not understand the situation, the section of the instructions dealing with operation was repeated. This was necessary in several cases, especially with some of the commercial drivers. In no case was the first regular trial started until the driver demonstrated his ability to pass several cars. Lack of understanding of the task was thus avoided.

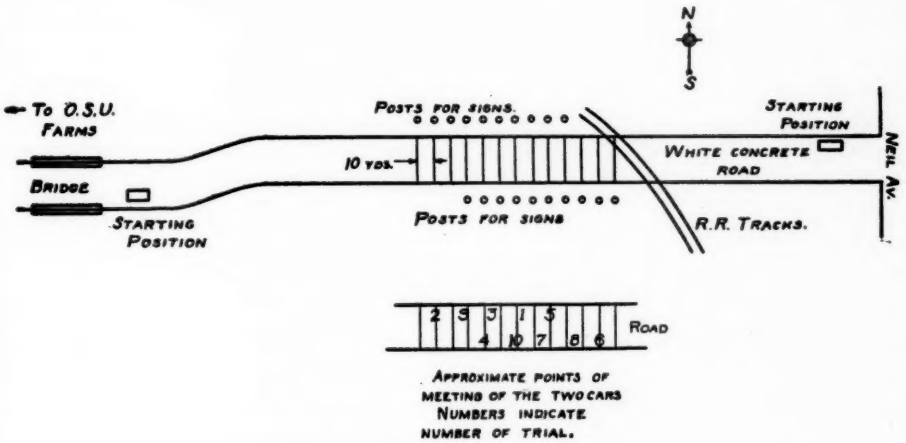

FIG. 1. LAYOUT OF TEST ROAD

ROAD LAYOUT

Since the miniature highway apparatus was designed as the result of preliminary work on estimation of velocity,[4] it was desirable to obtain an estimate of velocity in an actual road situation, in order to find out whether the differential scores on the miniature correlated with such estimates.

A nearly straight strip of concrete roadway three-tenths of a mile in length was marked off by signs at ten yard intervals (see figure 1). The signs were 14 inches wide by 18 inches high with 14 inch numerals from one to ten painted on them. Four-inch lines, painted across the road, connected the signs and furnished reference points on the road itself. Two cars were used, one carrying the experimenter and subjects, and the other a single driver. The cars approached each other, and the subjects (drivers being tested) were required to estimate the point at which the cars would pass.

A 1930 Model A Ford sedan was used. The experimenter drove, taking three or four students per trip to be tested. Record of his estimate was

[4] H. E. Burtt and T. W. Forbes. Visual Estimation of Velocity: Preliminary Experiment. *Ohio State Univ. Contrib. in Psychol.* 1930, number 11, 62–72.

made by each person on a blank form beneath which was a sheet of carbon paper, face up, so that marks made with a stylus could be read later by holding the blank to the light. The paper was indented but slightly by the stylus and each subject wrote inside of a narrow cardboard box, so that during the trials he would not see and be influenced by the estimates being made by those sitting beside him. The styli with which the subjects wrote were so constructed that the experimenter could withdraw the writing points and thus make sure that all judgments were made before the car passed a given point.

The subjects' car ran at the same speed during each trial (25 miles per hour), while the approaching car was driven according to the following schedule: Practice 28, 32; Regular Trials 40, 32, 28, 35, 42, 16, 27, 22, 22, 30 miles per hour. This series of speeds was determined empirically so as to distribute the points of meeting evenly over the marked zone. In practice, it was impossible to maintain these points exactly, even though both drivers used certain landmarks in starting and accelerating; so that for purposes of computing errors in estimation, a knowledge of the actual point of passing was necessary. To gain this, the point at which bumper passed bumper was recorded by the experimenter.

Each person made two series of ten judgments each on different days. His average error was used as his score for each series.

RESULTS

On the apparatus, thirty-one commercial drivers and fifty students were tested. As mentioned above, the test followed one minute of practice and consisted of three trials of five minutes each. The commercial drivers were divided into an "accident-prone" group whose records showed one or more accidents per four years, and a group who had sustained fewer than this number of accidents. In nine cases where records were unavailable, ratings of "good" or "poor" were obtained. The above criterion was used following the findings of Bingham and Slocombe[5] that roughly one-third of the employees of a metropolitan transportation company sustained one-half of the accidents and of Lauer[6] who found that, in a group similar to ours, about one person in three has an accident during 4.6 years.

The scores were treated statistically to ascertain whether or not the means of the accident-prone and non-accident group differed significantly. Fisher's "t" function[7] was used in order to correct as much as possible for small number of cases (thirty-one) in the commercial group.

In table 1 are given seven of the highest "t" values obtained, together with their significance. For instance, the first line of the table indicates that the best record of the three trials for each individual yielded a "t" value of 1.65, which means that there are

[5] W. V. Bingham, and C. S. Slocombe. Men Who Have Accidents: Individual Differences Among Motormen and Bus Operators. *Person. Jour.*, 1927, 6, 251–257.

[6] A. R. Lauer. Frequency of Accidents in a Selected Group of Drivers. *Ohio State Univ. Contrib. to Psychol.*, 1930, number 11, p. 18.

[7] R. A. Fisher. *Statistical methods for research workers.* London, Oliver & Boyd, 1930, Ch. V.

eighty-nine chances in one-hundred that the difference indicated between the group means is real.

The table shows that the test successfully differentiated the accident-prone group from those with a good accident record, for the last three scores (lines 5, 6 and 7) indicate a probability of a real difference of over 99 chances out of 100. The test should, of course, be standardized on a larger number of commercial or other drivers having records as to number of accidents. However, the fact that the difference between the group means is statistically significant when correction has been made as far as is statistically possible for small number of cases, makes the obtained differentiation worth stressing. It is also probable that this differentiation can be made more perfect by increasing the complexity of the test as suggested below in considering the reliabilities.

Figure 2 shows graphically the extent of the differentiation by the best composite score (line 6 in the table). A tentative dividing line between accident-prone and normal groups has been indicated, and scores for the students have been added. It will be noted that: (1) only five of the thirty-one commercial drivers would be placed in the wrong group by such a division; (2) only four of the fifty students fell in the accident-prone group on this basis, and (3) the majority of the students made comparatively high scores. Other scores show a similar distribution.

It is conceivable that those who made poor scores simply ran the apparatus fast and got into difficulties. This, however, was not the case as indicated by a non-significant group differentiation based on speed driven (t = .42). In other words, many of the poor scores were made even when trying to drive carefully.

Those measures which showed the highest significance in differentiating the accident-prone group, when used with the student group correlated with scores on the Ohio State University intelligence test only to the extent of from .05 to .36 (P. E. of .11 to .12). Evidently the driving test did not measure intelligence of the scholastic type to any great extent.

On the other hand, slightly higher correlations with estimation of speed on the road ranging from .42 to .55

TABLE 1

Group differences between accident-prone and normal drivers—thirty-one commercial subjects

VARIABLE	"t" VALUE	CHANCES OUT OF 100 OF REAL DIFFERENCE
1. Best trial	1.65	89
2. Total cut-ins, best trial and third safe passes, weighted one	2.39	97
3. Same variables as in #2 weighted "t"/sigma	2.46	98
4. Ratio total smash-ups to cars passed	1.53	85
5. Ratio total cut-ins to safe passes	3.25	Over 99
6. Best trial and #5 weighted "t"/sigma	3.33	Over 99
7. #4 and #5 weighted "t"/sigma	2.96	Over 99

(P.E. of .08 to .10) indicate that judgment of speed was a factor measured by the score entered in line 4 of table 1. The measure indicated in line 5 of the same table, however, correlated insignificantly with this same road judgment, indicating that the laboratory test was measuring something more than estimation of speed.

Analysis of the reactions required of the driver in the laboratory test led to the conclusion that this added factor was that of mechanical foresight, perhaps related to "recognition of potential hazards" which has been found important by a municipal railway company.[8] In the apparatus test this took the form of perceiving the interrelationships of the cars and of speed changes far enough ahead of time to avoid difficulties. The apparatus was arranged so that in order to manipulate successfully, the subject had to react several seconds before the time when the cars actually passed. Lack of foresight appeared in the form of acceleration when the situation called for deceleration or vice versa, or perhaps starting to pass too early or too late.

Moving the eyepiece to the left and back to the right at the wrong time was another evidence of the same thing, while some of the men with the worst accident records seemed to have very little regard for a car which had passed out of sight although it still might be a factor in the situation. This resulted in collisions from the side.

One more factor which the test measured to some extent was "losing one's head." Certain drivers were upset by misjudgments and the resulting crash to the extent that they

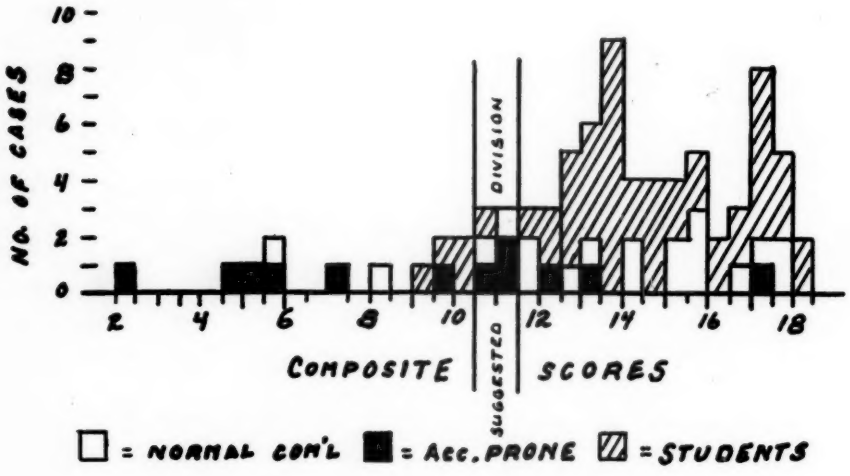

FIG. 2. DIFFERENTIAL SCORES ON APPARATUS TEST

[8] Cleveland Railway Company and Policyholders Service Bureau of the Metropolitan Life Insurance Company. *The Accident-Prone Employee.*

were unable to manipulate successfully again for an appreciable time.

The fifty students were also available for testing on the road, and each was given two series of ten judgments each. Figure 3 gives the results in graphic form. The graph shows that the most common average error was eight to ten yards, and that different individuals made average errors of from two to twenty yards. In connection with the latter, it is of interest that errors on single trials ran as high as 50 yards out of approximately 200 yards total distance between cars at time of judgment. Estimation of speed was, then, often very inaccurate. Correlations of these scores with apparatus scores have been mentioned above. The reliabilities of these scores are of interest in connection with the size of errors and will be discussed later.

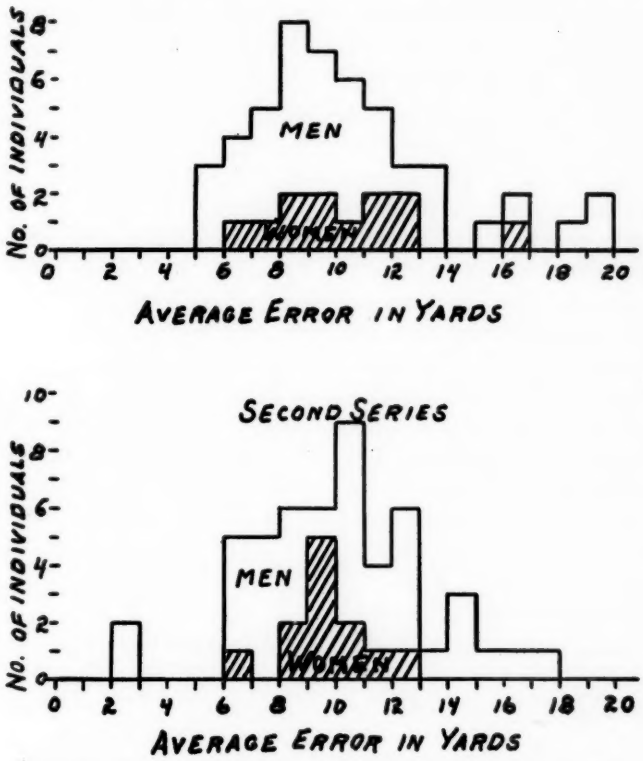

FIG. 3. DISTRIBUTIONS OF ERROR SCORES IN JUDGMENT OF SPEED ROAD TEST (FIFTY STUDENTS)

APPARATUS RELIABILITIES

On the apparatus, Brown-Spearman reliability coefficients were computed for two of the three basic scores appearing in table 1. Since the "best trial" occurred but once no computation of reliability between trials was possible. The coefficient for smash-ups per car (no. 4, table 1) was .47

which is undesirably low. Charting the averages for each group for each trial gave group learning curves which indicated that increased complexity of the test would tend to raise this reliability. The coefficient for cut-ins per safe pass (no. 5, table 1) was .80 which is very fair for a test only fifteen minutes long.

Actual retests on the apparatus were given to twenty-four men and eight women students. Here the reliability coefficients were lower, running from .20 ± .14 to .57 ± .10 and together with the group learning curves were taken to indicate the desirability of greater complexity. As it was, the poorer group reached the limit of performance due to learning by about the end of the first test. The better group started much nearer this limit and reached it more quickly, but since they were still bounded by it in the retest, the reliabilities were affected. This was especially true of smash-ups per car (no. 4, table 1). Increasing the complexity of the test will tend to raise the limit of performance, and reduce the speed of learning of the poorer group, thus increasing the retest reliability.

ROAD TEST RELIABILITIES

The fifty students were given two series on the road and reliabilities computed. The Brown-Spearman coefficients for first series, second series and for the total of the two were quite low, being .59, .49, and .57, respectively. Retest reliability was .14 ± .13. Since it was thought possible that the difficulty of the judgment was a function of the distance between cars, errors were expressed as fractions of the distance from point of estimate and point where cars passed, and reliabilities were recomputed. They were, however, lowered slightly rather than raised. Differences in seat position may have affected reliabilities to a slight extent, the probability of a true difference between those who changed position in the retest and those who remained in the same seat being eighty chances in one hundred. Individual curves showed very little learning trend.

Furthermore, there was evidence that *expectation* of speed was influencing estimates. For instance, several subjects spontaneously made remarks such as this, "He fooled me that time. I thought he was going to go fast because he went slow last time." Judgments difficult to make with sureness would be liable to such influence. It was, therefore, concluded that the low coefficients of reliability for estimation of speed on the road actually represented low reliability.

The possibility of misjudgment due to erroneous expectation of speed is undoubtedly of importance in road driving. Take for example, the case of a driver approaching a car which is reversing while at the same time a third car is approaching from the opposite direction. The first driver may be so influenced by the idea that the second car is standing still, that by the time he discovers it to be actually *reversing*, he will be unable to avoid hitting either it or the approaching third car.

The low reliability of the judgments of speed on the road suggest that most drivers should learn not to trust their

own estimates of speed implicitly, but rather to play safe always.

SUMMARY

1. Apparatus was designed to preserve as nearly as possible the relationships of driving and to present them to the driver in the laboratory. Cars and speeds were reduced to scale and the necessity of judging speeds and passing cars involved. Failure produced actual collisions and also caused error scores on electrical counters. A road test of estimation of speed was also devised.

2. Thirty-one commercial drivers and fifty university students were tested. Scores for commercial drivers with good and poor accident records were treated statistically by means of Fisher's "t" function for significant group difference.

3. The apparatus differentiated the accident-prone from the normal group with very fair success. Scores were obtained which yielded probabilities of over 99 chances in 100 of a real group difference. A suggested critical zone actually misplaced only five of the thirty-one commercial drivers. The majority of the students made scores which placed them in the better group.

4. Scores on the test correlated practically zero with intelligence test scores for the students. One factor measured by the apparatus, however, was estimation of speed as indicated by a correlation of from .42 to .55 with road scores. A further factor measured was one of mechanical foresight, while in a few cases "losing one's head" was a factor.

5. Reliabilities and learning curves for the apparatus indicate desirability of increased complexity in the test.

6. Large errors, low reliabilities and reports of subjects indicate that judgment of speed as *tested on the road* was unreliable. This suggests that most drivers should play safe rather than trust their own judgments of speed too implicitly.

7. The test should be revised as indicated and standardized with a significantly larger group of drivers whose accident records are known.

Manuscript received November 9, 1931

News Notes

INTERNATIONAL EXCHANGE OF PSYCHOTECHNICAL DOCUMENTS

At the International Conference for Psychotechnology held in Moscow, it was decided to organize an international center for exchange of tests and other psychotechnical documents. This center has now been established in Paris, and is directed by Henri Pièron. In more than a dozen countries correspondents have been appointed. It is the duty of each to collect important and representative materials of his own country, to transmit these to all other correspondents, and to exhibit documents received from foreign lands.

The Personnel Research Federation, appointed to represent the United States, recently sent abroad the first shipments of psychological and educational examinations, test-forms, interest blanks, personality inventories, and attitude scales.

Meanwhile contributions from foreign centers are steadily coming into the offices of the Federation, building up a unique collection of psychological tests and forms from many nations. It is planned to place this collection on exhibit at the Third International Conference of Eugenics (New York, August 21–23) and the Annual Meeting of the American Psychological Association at Ithaca.

STEVENS GUIDANCE CAMP

On the basis of last year's successful experiment, Stevens Institute of Technology is again holding its vocational guidance camp for preparatory school boys. The dates set are August 13 to 27. The fundamental purpose of the camp is to help young men to make intelligent choice of type of college and career.

The various methods of vocational guidance will be used, including occupational try-out, and aptitude testing. Among the lecturers will be Clarence Barbour, Dexter S. Kimball, Foster Bain, and Roy V. Wright, while Johnson O'Connor and W. V. Bingham will be in charge of psychological studies and conferences.

COLUMBIA CONSERVE COMPANY

The Columbia Conserve Company of Indianapolis is now telling consumers about its management and industrial relations plan. Two labels have been prepared, one of which reads:

"We, the workers, who packed this high quality product own and manage the Columbia Conserve Company. We all belong to the council which determines the policies of our business. There is no longer unemployment among us. We are paid by the week and retained by the year. We can be discharged only by the majority vote of our fellow workers. We are paid in full during sickness and receive old age pensions. We and our dependents receive complete medical and hospital care at the company's expense and three weeks vacation a year on full pay.

"You can help us employ more workers under these conditions by using our products and recommending them to your friends. For further information write for our free pamphlet 'An Experiment in Industrial Democracy.' "

The other label follows:

"No wonder we make such fine soups, catsup, tomato juice, and other products. We, the workers, own the business. We are proud that we have succeeded, and succeeded because we have done better work because we cared. Not one of us has been discharged on account of hard times. For us there is no unemployment. There are 52 pay envelopes a year, old age pensions, expert care in sickness and in health, three weeks vacation with full pay. Why should we not make good products?

"If you think this plan should spread, and if you find that this product is better

because it is made by cooks who care, please tell your friends about it."

COMPULSORY UNEMPLOYMENT INSURANCE

An excellent source of information on *Compulsory Unemployment Insurance* is a publication by that name from the University of North Carolina Press. Called a "debate handbook," numerous excerpts are given from sources opposed to, and in favor of, compulsory unemployment insurance, and from general discussions of the topic. In addition there is a good bibliography. Through this booklet the best thought of both sides of the question may be rapidly obtained.

PRINCETON INDUSTRIAL RELATIONS SECTION

In the expectation that company plans for employee savings and investment will increase rapidly in number and coverage in the coming years, the Industrial Relations Section of Princeton University has inaugurated a series of brief studies of experience under various types of plans. Two recent publications deal with *The Use of Building and Loan Associations*, and *The Use of Credit Unions* in this connection. A later report will analyze experience with employee stock purchase plans during the current depression.

RELIABILITY, VALIDITY, AND DEPENDABILITY

Reliability, Validity, and Dependability is the title of the latest number, Reprint and Circular Series of the Personnel Research Federation. The pamphlet was prepared by W. V. Bingham and will be sent to members free of charge upon request. Others may obtain it from the office of the Federation at 20 cents a copy.

AMERICAN DOCTORAL DISSERTATIONS

A List of American Doctoral Dissertations Printed in 1930 is now available and is for sale by the Superintendent of Documents, Washington, D. C., price 65 cents. Publications are listed alphabetically and are classified by subject and university of origin.

PERSONAL ITEMS

R. O. Beckman is now on the staff of the Psychological Corporation.

Ernest R. Burton is now Acting Director of Employment of the United States Office of Indian Affairs.

W. V. Bingham, Director of the Personnel Research Federation, is lecturing at the Harvard University summer school.

Rex B. Hersey of the University of Pennsylvania is in Germany on a fifteen-month fellowship to study workers' emotions.

Douglas Fryer, Professor of Psychology at New York University, recently returned to this country after a year of research in Europe.

EVENTS IN ADVANCE

August 21–23. *Third International Conference of Eugenics.* American Museum of Natural History, New York.

August 22–27. *Tenth International Conference of Psychology.* Copenhagen.

August 24–27. *Industrial Relations Conference.* Auspices of National Conference of Y. M. C. A.'s, Silver Bay, New York.

September 8–10. *Annual Meeting of the American Psychological Association.* Ithaca, New York.

October 3–7. *Twenty-first Annual Safety Congress, National Safety Council.* Washington, D. C.

November 17–18. *Eleventh Annual Fall Conference,* Personnel Research Federation. New York.

Personnel Books

EDITED BY O. MILTON HALL

READINGS IN VOCATIONAL EDUCATION

By Nicholas Ricciardi and Ira W. Kirby. New York: Century, 1932, xi + 570 pp., $3.00

Reviewed by J. C. WRIGHT, *Federal Board for Vocational Education*

Any new social movement begins with propaganda which largely takes the form of ephemeral and transitory material written or spoken, as the case may be. The advocated movement, having become a fact and having passed into what may be called the operating stage, experience begins to be secured. This experience still remains largely in the possession of individuals who are widely scattered, each of whom is working on his own individual problem. As time goes on there emerges an organization and a union of these experiences in the form of literature of the subject. In this way a philosophy is established and ways and means are developed for carrying that philosophy into practice.

This has been the case with vocational education, which while still young, has developed a literature and a philosophy in the 15 or 20 years of its existence. The purpose of Messrs. Ricciardi and Kirby in their book, *Readings in Vocational Education*, has been to bring together from the literature of vocational education such extracts as would enable the reader to understand the present philosophy, the present conceptions and the present methods in vocational education. In doing this they have drawn upon numerous sources and on the whole they have drawn upon the writings of those who are recognized as having some standing in their respective fields of work.

The book covers practically all of the major problems in vocational education. It deals very largely with original sources and material drawn from those sources. The material is presented with little or no comment, leaving it for the reader to make his own interpretations and draw his own conclusions. The essentials, however, of such publications as the report of the National Commission, discussions on the floor of Congress, and other extracts from the literature of this particular field of education, are well selected.

On the whole, the authors are to be congratulated on having brought together a maximum of material which can not fail to give the reader a very clear understanding of what vocational education is, what it stands for, and how it has developed. The book would appear to be of particular value in teacher training courses and should certainly be of great value to those school administrators who have not yet discovered what vocational education is, what its real social function is, and who have little knowledge as to how it can be developed in an efficient way.

INDUSTRIAL HYGIENE FOR ENGINEERS AND MANAGERS

By Carey P. McCord, M.D. New York: Harper, 1931, x + 336 pp., $5.00

Reviewed by CHAS. F. HORAN, *Hood Rubber Company*

This most recent publication of Dr. Carey P. McCord, medical director of the Industrial Health Conservancy Laboratories, assisted By Dr. Floyd P. Allen, of the Public Health Federation, is an effort to bring the highly technical occupational

disease matters into a more easily understood field of industrial management.

The preliminary portions of the book review the usual present-day practices in the treatment of accidents and illnesses in industry. Descriptions of necessary equipment for the treatment of industrial workers is given. The purposes of and practical requirements for various treatments are covered in a clear manner. The necessity for early and adequate treatment as a means of preventing infections is well presented.

An extremely elaborate list of 507 causes of occupational diseases, together with a cross index of "hazardous occupations" based upon a 1922 study by Dublin and Leiboff constitute the central theme. Many of the materials listed as occupational disease hazards have apparently been included because of their historical importance, rather than because of their present-day danger.

The importance of industrial mutual benefit associations is shown by the fact that 50 pages of this book are devoted to the organization and operation of this type of insurance.

The somewhat startling estimate that "approximately 9 per cent of those abnormal states detected among adult patients in general hospitals in industrial communities are related to work as a cause" is reported by the authors under "the frequency of occupational diseases." No supporting evidence of this estimate is offered.

As has always been the history of American treatises on occupational diseases, no chapter on the prevention of the diseases is included by the authors.

THE NEW PSYCHOLOGY OF SELLING AND ADVERTISING

By Henry C. Link. New York: Macmillan, 1932, xxiii + 293 pp., $3.00

Reviewed by H. K. Nixon, *Columbia University*

In this interesting and readable volume Dr. Link joins the small army of recent writers trying to make advertisers and sellers "consumer conscious." The theme of the book is the necessity for scientific observation and measurement of people's buying behavior in order to find clues to their future buying behavior. A foreword by John Broadus Watson indicates the brand of psychology advocated. As the author neatly sums it up, "The psychology of acts is a psychology of facts."

There are two major ways of arriving at these facts about human wants. One is the way of genius, the method of direct knowledge or intuition. People possessing this ability—Dr. Link calls it a "faculty"—are very rare and very valuable. Their methods, unfortunately, cannot be formulated or explained, and are accordingly dismissed from further consideration. In fact the reviewer is surprised to find special faculties and intuition even mentioned by a follower of the "new" psychology.

The second method of securing information is through a study of buying behavior. This is to be accomplished by means of questionnaires and by careful tabulation of want slips in stores. The old, obsolete introspective methods are to be avoided. It is concluded, however, that of the methods of testing the effectiveness of individual advertisements the opinion test is the most promising. Likewise sample questionnaires submitted as examples of good practice include such invitations to introspection as: "Why do you use the brand you are using?," "What feature impressed you most?," "If you read *Ballyhoo Magazine* what pleased you?," "Do you object to Lysol because of its odor?"

The "new" psychology is to be applied at every point at which the producer meets the public, namely, through salesmen, retailers and dealers, sales compilations, market surveys, advertising. This comprehensive plan of approach makes possible chapters on such diverse topics as market surveys, radio and direct mail advertising, the qualities of salesmen, the phenomena of fashion, methods of testing advertisements, merchandise control, electric sales

records. The chapters dealing with the technique of market surveys are the most comprehensive and give interesting if popular expositions of the methods and results of investigations by marketing departments of agencies and other advertising organizations. The efforts of the laboratory psychologists are dismissed as inconsequential.

The chapter on the qualities of successful salesmen reviews briefly a few of the outstanding efforts that have been made to measure and describe the selling personality. The author concludes that the results are largely negative but on logical grounds urges the use of Allport's A-S test and tests of introversion-extroversion. His major thesis is that the personality of the salesman is relatively unimportant and that primary emphasis should be placed upon studying the wants of the customer. There is, however, little suggestion as to how the salesman shall do this or how he shall apply the results of his study.

In general, the book represents a revolt against the school of psychology which made a frank attempt to find psychological methods which the salesman and advertiser could employ in getting people to buy. This "new" psychology claims to be concerned "with the discovery of how to *avoid* sales resistance, how to discover and sell articles to which there will be the least resistance, how to crystallize the latest wants of consumers into active demand."

The book itself well exemplifies this technique of production and selling. It cleverly plays up to the prejudices of the advertising fraternity. It avoids all heavy, scholarly discussion which might arouse resistance. It flatters the advertising man by telling him he is unknowingly a good psychologist—far better than the impractical and obsolete academic scientists. In language which advertisers will recognize as their own it offers this "new" and "different" product which modern science now makes possible, the genuine to be secured through the Psychological Corporation of which Dr. Link is secretary. As Dr. Watson well points out in his testimonial, the book is "A unique example of what a book can be when scientific training and practical experience are combined."

HUMAN ENGINEERING

By Harry Myers. New York: Harper, 1932, 312 pp., $3.00

Reviewed by ALAN H. MOGENSEN, *Factory and Industrial Management*

It is seldom that any man devotes himself so intensely to the writing of a book that he actually pays for the devotion with his life. This however was the case with Dr. Myers, who died March 19th, but whose influence upon thousands of men in industry will continue as a definite force. For those who have known him, Dr. Myers still lives. For others, who have not been so fortunate, his book will carry the message to which he devoted his life—namely, showing that it is entirely possible for industry to make successful people at the same time it makes successful products.

When I say the book will carry his message, I do so only after careful consideration. A little over a year before the book was published, the author spent several days with me, and wanted my opinion on the material and its arrangement. He started to read the opening page. "If everyone did his work right and managed his affairs properly, everybody would have all the money he really needs, and the world would be rid of much of its sickness, most of its accidents, and all of its burdensome debts and poverty." I said: "Wait a minute. Knowing you and sitting here watching you read that with the conviction you put in it, it sounds all right. But let me sit down by myself, and just read the cold type. I want to see if the book will stand reading by people who don't know you." For Myers himself was better able to hold a crowd than any other man I knew.

And as I was convinced as I read the first draft, the personality that made so many friends *is* between the covers of this book. It is doubtful, though, if any man

could put so much of his whole life into anything without the result reflecting his character.

Starting as a physician, Myers entered the field of personnel work during the war. In charge of this work at the Ohio Bran Company at Mansfield, Ohio, a booklet "Our Work" was developed to help the worker understand better what the management was endeavoring to do. It was realized then that success of the individual comes only through intelligent interest in his work and the proper management of his affairs. Much evidence of the thorough groundwork in the field of human relations are found in this plant today.

While Dr. Myers was Superintendent of Personnel of the Frigidaire Corporation, "You and Your Work" went through several printings. Designed primarily for employees of that company, the book was sent to many people who had heard him speak. He used to prove his point that few people were really interested in making progress by offering to send the booklet free of charge to those who would write him for it—usually only 1 to 2 per cent of those who heard him speak, and so enthusiastically agreed with him.

A university professor, to whom Myers had shown the book, said: "Your ideas are sound, but you don't mean to tell me you think you can teach old dogs new tricks, do you?" "Well, Professor," Dr. Myers replied, "that all depends upon what you call old. Age is only a point of view. I know some old people who are young, and I know some young people who are old, for if you think you know all about some things you are old, and if you believe you are now doing anything as well as it can be done, you are very old, yes, old enough to die; in fact, you are dead, and just waiting for your competitors to hold your funeral.

"But if you are glad to admit that you know but little about anything, you are young, and if you are sure everything can be done much better than it is now being done, or ever will be done, then you are young and growing, and prosperous years are ahead of you and all you control."

The book is written entirely in the style followed by the author when addressing groups of foremen, executives, and others; and in keeping with its title, it is human. The author, who spent most of the years of his life in close contact with people, expresses his belief throughout the volume that the things the workers want are not so much different from the aims of management.

Pointing out that progress has been so much greater on the material side of life than on the human, Dr. Myers shows that people have not kept pace with progress. He quotes Thomas A. Edison, who said: "Problems in human engineering will in the future receive the same genius that the last century gave to engineering in more material form."

His six laws of good work, which are to be seen posted in many plants throughout the country, are described in considerable detail, together with his suggestions for having these laws carried out. Dr. Myers defines work as the use of time, energy, and materials. In this connection, he makes a statement that no doubt many readers will challenge. He says: "First, most people don't like to work; second, most people don't know how to work; and third, most people don't take care of what they earn."

The author stresses the importance of good health, showing its relation to industry and to the individual. One of the best treatments of the relation of the supervisor to the worker will be found in the book, and while the reader may not fully agree with all the points made by the author, no one can say it is "just another book" on human relations in industry.

I really believe that every person in the field of personnel work should be made to start reading *Human Engineering*. I believe very few who start the book will not finish it. Many will re-read it, some several times. All will find that if properly applied, these principles set forth not only work, but pay. Today more than ever before, industry needs the whole-hearted coöperation of every person in the organization, if it is to make a better product at a lower cost.

VOCATIONAL GUIDANCE

Report of the Sub-committee on Vocational Guidance, White House Conference on Child Health and Protection, M. Edith Campbell (Chairman). New York: Century, 1932, xxi + 396 pp., $3.00

Reviewed by O. L. HARVEY, *Cambridge, Massachusetts*

Section III of the White House conference on child health and protection had for its scope of investigation education and training. Committee D of this section was required to investigate vocational guidance and child labor. The report here under review is the contribution made by a subcommittee of this group, the terms of its reference being vocational guidance.

The body of the work may be divided roughly into four parts. The first deals with the study of the individual, counseling, scholarships, occupational studies, and curriculum work. Substantially it consists of an interpretation of findings from a questionnaire study of some 150 cities of population 25,000 and over. It may be described as the part dealing with analysis of the individual with a view to discovering his aptitudes, and of occupations to discover what they require of him; the process by which the individual may be taught how to decide which occupations seem best suited to his particular interests and abilities; and, the manner in which specialists in counseling proceed in the fulfilment of their duties. Briefly, it deals with the pros and cons of preparing individuals to choose appropriate occupational fields. The second part—the longest single unit in the book—deals with "individualized opportunities for training for an occupation." It is concerned mainly with pointing the need for vocational guidance. It amounts to a vindication of—or perhaps an *apologia* for—vocational guidance. The third part constitutes a discussion of junior employment service. The terms of the subcommittee's investigation prevented any reference to fundamental socio-economic problems; consequently the recommendations submitted under this heading are necessarily limited to the procedures involved in the administration of junior employment bureaus. The last part of the work deals briefly with special problems in vocational guidance, such as the Amerindian and the negro, guidance in rural communities, and agencies outside the school.

A third of the entire volume comprises appendices, probably of considerable value to persons actually engaged in or tentatively considering the administration of a vocational guidance bureau; and two extensive bibliographies relating to occupational pamphlets and to publications (subsequent to 1920) having reference to vocational guidance.

Every chapter is followed by a brief list of recommendations. It is in this that the reviewer finds the main fault of the publication. Strictly speaking, recommendations by government committees should be based on investigations into factual material, and should be limited to the scope of the data discovered by their investigation. In so far as some of the recommendations appended to the chapters included in the first part of the volume are based on a questionnaire inquiry into existing practices, the subcommittee would appear to have adhered to these requirements. But the remaining part of the volume actually constitutes little more than a text book on *a priori* principles of vocational guidance. That one may concur with the pronouncements thus made, in no way diminishes their irrelevance in a publication of this description. The reviewer cannot conceal from himself the suspicion that too much of the book constitutes special pleading by vocational experts to demonstrate that vocational guidance is desirable—a claim that should be effected through some other medium.

Apart from this criticism, the reviewer finds himself in sympathy with the "report." In general, probably most progressive educationists will agree that more vocational education is desirable; and most

intelligent industrialists, that the current tremendous turnover of juvenile labor could be considerably reduced by better orientation, concerning the nature and limitations of occupations open to them, preferably *before* they enter upon the customary period of applied personal research into occupational pursuits. Consequently most persons who have genuinely at heart the basic interests of youthful workers will express cordial appreciation of the general aims of the subcommittee in charge of this publication. The practical experience of the reviewer, however, in the work of the Juvenile Affairs Boards and Apprenticeship Committees administered by the central government of one of the constituent member-nations of the British Commonwealth leaves him still essentially skeptical concerning the value of a vocational guidance program which is divorced from the far more pressing problems inherent in the badly coördinated economic organization of modern society. The reviewer is certainly not the only employment officer who has been faced with the insoluble problem of "counseling" a youth whose ambition to enter a given occupational field is checked only by the utter absence of any job in that field, and whose family circumstances are such that a job of some sort is imperative. Under these circumstances vocational guidance becomes analogous to budgeting for a $5000 home on a $2000 income. It is largely a waste of time. The ideal aims of vocational guidance are essentially praiseworthy. There can be no serious question that the guidance concept of education as a process of preparation for constructive participation in the world's work is fundamentally sound. But is it not very often somewhat shallow? How, other than by polite indifference, would a vocational counselor rebut the argument presented by our present tremendous unemployment problem, by which the significance of the individual worker and his interests become utterly naught. What is needed is a job, regardless of its appropriateness. And employers cannot help at such times but behave in a more or less predatory manner.

One may conclude this review by asking humbly but quite sincerely, has committee IIID—nay, has the White House Conference itself—delved deeply enough into the problems basic in our modern employment phenomena? Is it not possible that they delude themselves with shadows and rationalizations, of which this present report is only one?

STUDENT SELF-SUPPORT AT THE UNIVERSITY OF MINNESOTA

By James G. Umstattd. Minneapolis: Univ. of Minnesota Press, 1932, xii + 205 pp., $2.50

Reviewed by HENRY BEAUMONT, *University of Kentucky*

This is by long odds the most thoroughgoing study ever made of the problem of student self-support, which is rapidly coming to the foreground in our colleges and universities as a major issue. What is more, it demonstrates the importance of the much neglected educational aspect of self-support.

The findings of this study are based on four groups of data: a sample of 2838 questionnaires which were found to be representative of the entire student body, scholastic records, percentile scores on the College Ability Test, and employment data in the comptroller's office. Some of the striking facts revealed are:

1. There is a slight inverse relationship between earnings and a favorable economic status, indicating that only to a small degree do students earn in proportion to their need.

2. Earnings, as indicated by 55 per cent of the group studied, ranged from less than $100 (reported by 10.5 per cent) to over $900 (reported by 3.4 per cent) for the academic year 1928–9. The median salary was 46 cents per hour with a range from 10–20 cents to $5.00 per hour.

3. Moderate employment does not lower scholarship, but extreme self-support does. "Seventy-five per cent of all expenses earned" seems to be the danger line. The age of those who earned all expenses was higher than the average and those who earned most were admitted to the University Hospital more frequently.

Augmented earnings tend to be associated with increased participation in Y. M. C. A. work, literary societies, etc. but with somewhat decreased membership in fraternities and participation in dances. There is no decrease in the number of offices held by those who earn most.

4. Most students state that they derive advantages from self-support and "experience" is given by a majority as the chief gain. More students listed "none" under "disadvantages" than gave any other answer. Athletics and study were cited as "partly sacrificed activities." A more flexible study schedule was suggested as a way in which the University could help self-supporting students.

The educational aspect rather than the necessity of self-support comes to the foreground in this study. It suggests that portions of certain curricula might be placed on a practical training basis and that only those with excessive self-support activities need be advised to carry a lighter study load. Though this emphasis on the educational aspect is in itself a valuable contribution, it should be borne in mind that this study was made in 1928–9 and that the situation at that time cannot be assumed to give a correct picture of today.

An excellent review of previous studies and a short but comprehensive bibliography add much to the value of this stimulating report.

BUSINESS OPPORTUNITIES FOR WOMEN

By Catharine Oglesby. New York: Harper, 1932, 300 pp., $2.50

Reviewed by EMILY BURR, *Vocational Adjustment Bureau for Girls*

At a time when there are practically no job openings anywhere, it is rather disconcerting to be told that "Now it is no longer a case of an employer alone having the privilege of selection. The employee also shares the right to question, judge and decide."

In her book Miss Oglesby offers guidance to women in the choosing of jobs in fifteen clearly defined fields. She speaks of the book as a Baedecker of occupation; it is certainly detailed and thorough in its study of business opportunities in every field open to women.

The author is well qualified to write on the subject as she has had practical experience as the head of a large fashion establishment with showrooms in Paris, London, and New York, and more recently as Associate Editor of the Ladies' Home Journal.

There are chapters on how to choose, look for, get, and keep your job. These contain the most helpful suggestions in the book.

The opportunities which Miss Oglesby has investigated cover the fields of advertising, fashion, arts and crafts, cosmetics, finance, government, management, personnel work, motion pictures, selling, office work, social service, nutrition, journalism, and transportation. Each type of work is analyzed and its possibilities and demands clearly set forth. The advice of women who have achieved success, fame and big salaries in various lines is quoted. In referring to the weakness of women in business, Miss Oglesby mentions several vital reasons for failure to make good. Among them, the fact that detail often absorbs the entire attention and that growth is arrested by failure to learn new facts and new methods and by too great servility to routine. Many women workers, Miss Oglesby finds, labor with material which they not only do not understand, but which they make no effort to understand.

She finds that many women adopt their jobs as if it were a "cause" and choose to

suffer with a firm which offers them no future rather than abandon the sterile job and secure more lucrative occupation elsewhere. To get a better job, or to make her job better, Miss Oglesby finds that all a woman needs is to be mentally capable, emotionally stable and sartorially smart. She pleads for higher education of women and states that in her survey of women in business, she has found the lower ranks crowded while the upper ranks were thin.

While reading of the book may not, in the present crisis, work the magic which its author had hoped, it will prove a benefit to all business women with ambition to succeed. Vocational counselors will find much in the volume to help them in guiding girls into channels affording the greatest likelihood of success.

JOBS, MACHINES, AND CAPITALISM. By Arthur Dahlberg, Ph.D. New York: Macmillan, 1932, xv + 252 pp., $3.00.

Dr. Dahlberg scrutinizes the capitalistic system in industry from the viewpoint of a graduate engineer and of a thoughtful student of economics, sociology and philosophy. He finds much to criticise, although he believes that capitalism, if subjected to some renovation and repair, is superior to communism and other proposed substitutes.

Briefly summarized, the author's argument runs somewhat like this:

Under modern economic organization, and with what is now considered normal working time, industry can produce more commodities than are required. Moreover, an undue proportion of the gains of business goes to the owners of capital, who thereby enjoy larger incomes than they can spend for necessities. The results are further expansion of productive capacity and ruinous competition among producers of things that people do not need. Elimination of economic waste and excess plant capacity would make conditions worse, since it would throw many workers out of employment. The solution, in the opinion of Dahlberg, lies in creating an artificial scarcity of labor through federal legislation limiting the hours of work to perhaps four a day. The resulting improvement in the bargaining power of labor would, he thinks, divert a larger share of the national income to those who spend their money promptly for necessities. This together with the automatic absorption of surplus labor on account of shorter working hours, the author believes would cure many of the ills he finds in our present economic system.

VOCATIONAL STUDIES IN JOURNALISM. By Walter B. Pitkin and Robert F. Harrel. New York: Columbia Univ. Press, 1931, 158 pp., $2.00.

Part I describes the results of a study of "editorial judgment" of experienced newspaper men as compared with students of journalism. Tests were designed to measure judgment of importance and news value of news items, ability to select and arrange items for first page make-up, judgment of truth of rumor, and knowledge of words. In all of these there is little difference between the mature newspaper men and students. The latter, however, do differ greatly from typical newspaper workers in personal interests.

Part II attempts to isolate the factors making for success in journalism on the basis of a study of the careers of five hundred successful journalists.

SAVINGS AND EMPLOYEE SAVINGS PLANS IN PHILADELPHIA. By William J. Carson. Philadelphia: Univ. of Pennsylvania Press, 1932, xi + 112 pp., $1.50.

This study of savings in Philadelphia points out the amount, growth, and changes in savings, and describes plans that have been developed by different industrial companies in the city to encourage the practice of saving and thrift among employees. Data were obtained through questionnaires and interviews with representatives of savings and commercial banks, insurance companies, and industrial firms.

MEN WORKING. By Norman Beasley. New York: Harper, 1931, xix + 296 pp., $3.00.

This is a story of the Goodyear Tire and Rubber Company, and at the same time a

history of rubber. It is not a story of manufacturing processes, but, rather, the author was more interested in what this corporation has done, and is doing, for those who have worked for it.

In 1839 Charles Goodyear, after patient experimentation, developed the fundamental process of vulcanization. Nearly forty years after his death a company was organized, adopting the pioneer's name. Since then it has become the largest rubber company in the world. This book traces its growth, down to the building of the Akron. It would not be complete without the chapters concerned with industrial relations—"Giving Men a Chance to Improve," "An Industrial Assembly is Elected," "How Men Are Given a Voice in Management," to name a few.

Interestingly written, this is a story of fact that reads like fiction.

MAKING THE MOST OF YOUR LIFE. By John J. B. Morgan and Ewing T. Webb, New York: Long and Smith, 1932, x + 250 pp., $2.50.

This is a parallel volume to *Strategy in Handling People*, by the same authors. The technique of presentation employed is identical with that volume in its numerous citations of personal anecdotes about "success" experiences of prominent men. The book has a good deal of the "onward and upward forever" attitude. But the specific injunctions offered as the conclusion to each chapter contain a good deal of sane wisdom. Readers who like their philosophy in homeopathic and sugar-coated doses will undoubtedly find in this book some inspiration and aid in their personal living.

THE CRAVING FOR SUPERIORITY. By Raymond Dodge and Eugene Kahn. New Haven: Yale Univ. Press, 1931, 69 pp., $1.50.

The purpose of this book is to state in a tentative way a synthesis of a psychological and psychopathological point of view respecting the importance of the craving for superiority. This trait is considered by the authors as universal, although it is recognised that its satisfactions may appear in a great variety of forms. In a sense, the book is an attempt to reconcile some of the material first given popular expression by William McDougall and in another field by Alfred Adler. The stress placed upon the significance of the craving for superiority and the recognition of its numerous normal and abnormal manifestations make the volume suggestive, but not altogether novel.

THE WHOLESOME PERSONALITY. By William H. Burnham. New York: Appleton, 1932, xiv + 712 pp., $3.50.

If there is any possible fault in this remarkably inclusive study of the personality, it is that there is too much of it. It is addressed primarily to teachers and is organized definitely as a text book. Anyone who will patiently master its seven hundred pages would obtain a splendid grasp of the best consensus of modern psychology about the nature of personality. The author provides an excellent summary of the scope of the work in the following paragraph.

"For the individual, in other words, it all condenses into six interrelated aims: integration of the personality; significant tasks, individual and social; the scientific attitude, the highest form of the learning attitude; persistence, the ability to endure, to repeat one's efforts again and again; the normal democratic group, social interests, coöperation, and the readiness to sacrifice personal interest for the sake of the group; the genetic point of view with integration of conflicts at higher levels." (Page 687.)

A HISTORY OF PSYCHOLOGY IN AUTOBIOGRAPHY (VOL. II). Edited by Carl Murchison. Worcester: Clark Univ. Press, 1932, xvii + 407 pp., $5.00.

This, the second volume of autobiographies of eminent psychologists, contains the life stories of Bourdon, Drever, Dunlap, Ferrari, Franz, Groos, Heymans, Höffding, Judd, Loland, Morgan, Pillsbury, Terman, Washburn, Woodworth, and Yerkes. All are thoughtfully prepared, and the reader cannot help but feel that the authors enjoyed themselves greatly in reciting their careers.

Aside from the unquestionable historical value too much cannot be said for these

biographies as source material for student psychologists. They give another dimension to the literature of the science. It is to be hoped that this series will be continued.

FUNDAMENTALS OF SOCIAL PSYCHOLOGY. (Second Edition.) By Emory S. Bogardus. New York: Century, 1931, xii + 444 pp., $3.50.

After eight years this work has been thoroughly rewritten and revised in the light of recent psychological advances. The main theme continues as intersocial stimulation and response, but as interstimulation at any given time of incipient and maturing personalities functioning in social situations.

Part I on Personality deals with various modes of behavior and with social attitudes. A chapter on "Configuration of Personality" illustrates the healthy influence of Gestalt psychology on the author. The second Part examines the distinguishing marks of personality which when taken together constitute individuality. Part III describes the different forms of social stimulation, while the final Part examines the effect on individuals of groups, crowds, and publics. Each chapter is followed by problems, readings, and stimulating "propositions."

READINGS IN EXPERIMENTAL PSYCHOLOGY. Edited by Willard Lee Valentine. New York: Harper, 1931, xv + 606 pp., $2.75.

This volume of readings is intended for use by elementary students in combination with a regular text. Its purpose is to introduce them to actual scientific research, to laboratory reports in the original, abridged and reworded to some extent for the sake of pedagogical simplicity. Forty-eight studies are given, including such well known reports as Simple Reaction Times to Light and Sound, by Wells, Kelley, and Murphy; The Conditioned Pupillary Reaction, by Cason; A Comparison of the Sex and Hunger Drive in the White Rat, by Warner; Studies in Emotional Reactions, by Landis, A Study of Brain Injury in Relation to Learning in the White Rat, by Lashley; and The Measurement of Opinion, by Thurstone.

CONTEMPORARY SOCIOLOGY. By Emory S. Bogardus. Los Angeles: Univ. of California Press, 1931, 483 pp., $3.50.

This is in reality a "readings," but one which has the logical continuity and wholeness of a single author. Contributions from a large number of contemporary sociologists are organized and welded together by original contributions of the writer. The result is a reasonably consistent picture of sociology and its concepts today. The book is organized into nine long chapters: tools in sociology; ecological concepts; cultural concepts; societal concepts; personal concepts; social process concepts; social organization concepts; social change concepts; and social research concepts.

HANDBOOK OF STATISTICAL NOMOGRAPHS, TABLES, AND FORMULAS. By J. W. Dunlap and A. K. Kurtz. Yonkers: World Book, 1932, 163 pp., $6.00.

Part One contains 29 nomographs, or graphic devices by which values for statistical formulas can be obtained rapidly without calculation. Their use results in an enormous saving of time. Directions are clear and easy to follow. Part Two is devoted to a series of most useful tables for finding squares, logarithms, for converting standard errors to probable errors, etc. A list of 434 formulas is invaluable for reference purposes. This handbook will prove a profitable investment to any user of statistics in psychological, sociological, or educational research.

STATISTICAL ABSTRACT OF THE UNITED STATES, 1931. Washington: U. S. Government Printing Office, 1931, xvii + 898 pp., $1.25.

This volume, the fifty-third of its kind, represents a digest of data collected by all statistical agencies of the National Government, as well as those of a considerable number of private agencies and several States. This wealth of information is presented in 851 tables organized in 32 general groups. It is naturally invaluable for reference purposes.

New Books

MANAGEMENT AND ADMINISTRATION

BUSINESS STATISTICS. By John R. Riggleman. New York: McGraw-Hill, 1932, 707 pp., $4.00.

THE STRUCTURE OF COMPETITIVE INDUSTRY. By E. A. G. Robinson. New York: Harcourt, 192 pp., $1.25.

EDUCATION AND TRAINING

A LIST OF AMERICAN DOCTORAL DISSERTATIONS PRINTED IN 1930. By Mary Wilson MacNair. Washington: Government Printing Office, 1932, 349 pp., $.65.

EDUCATIONAL EXPERIMENTS IN INDUSTRY. By Nathaniel Peffer. New York: Macmillan, 1932, 207 pp., $1.50.

LEADERS IN EDUCATION: A BIBLIOGRAPHICAL DIRECTORY. By J. McKeen Cattell. Lancaster: Science Press, 1932, 1043 pp., $10.00.

SAFETY EDUCATION IN SCHOOLS: REPORT OF THE SUBCOMMITTEE ON SAFETY EDUCATION IN SCHOOLS. New York: Century, 1932, 72 pp., $.50.

GUIDANCE

HOW TO GET A POSITION IN SCHOOL OR COLLEGE. By George W. Cox and W. H. Jones. Columbia: Southern Teachers' Agency, 1932, 97 pp., $1.00.

THE CHOICE OF AN OCCUPATION. Edited by Albert B. Crawford and Stuart H. Clement. New Haven: Yale Department of Personnel Study, 1932, 504 pp.

VOCATIONAL INFORMATION

BUSINESS OPPORTUNITIES FOR WOMEN. By Catharine Oglesby. New York: Harper, 1932, 307 pp., $2.50.

THE PRINCIPLES OF PHYSICAL EDUCATION; 2nd Edition. By Jesse Feiring Williams. Philadelphia: Saunders, 493 pp., $3.00.

COLLEGE PERSONNEL

STUDENT SELF-SUPPORT. By James G. Umstattd. Minneapolis: Univ. of Minnesota Press, 1932, 217 pp., $2.50.

PSYCHOLOGY

ELEMENTS OF HUMAN ENGINEERING. By Charles R. Gow. New York: Macmillan, 1932, 182 pp., $1.60.

MAKING THE MOST OF YOUR LIFE. By J. J. B. Morgan and E. T. Webb. New York: Long & Smith, 1932, 260 pp., $2.50.

MANAGING MINDS: A PRACTICAL PSYCHOLOGY FOR VOCATIONAL TEACHERS. By Charles R. Allen and Harry A. Tiemann. New York: Century, 1932, 299 pp., $2.50.

NORMAL YOUTH AND ITS EVERYDAY PROBLEMS. By D. A. Thom. New York: Appleton, 1932, 382 pp., $2.50.

SPOOK CROOKS! EXPOSING THE SECRETS OF THE PROPHETEERS WHO CONDUCT OUR WICKEDEST INDUSTRY. New York: Burt, 1932, 300 pp., $1.00.

THE EVOLUTION OF HUMAN BEHAVIOR. By Carl J. Warden. New York: Macmillan, 1932, 257 pp., $3.00.

THE HOUSE THAT FREUD BUILT. By Joseph Jastrow. New York: Greenberg, 1932, 303 pp., $2.50.

SOCIOLOGY

A PLANNED SOCIETY. By George Henry Soule. New York: Macmillan, 1932, 304 pp., $2.50.

AN IMPRESSIONISTIC VIEW OF THE WINTER OF 1930–31 IN NEW YORK CITY. By Lillian Brandt. New York: Welfare Council of New York City, 1932, 101 pp., $.50.

CHILD LABOR: REPORT OF THE SUBCOMMITTEE ON CHILD LABOR. New York: Century, 1932, 611 pp., $5.00.

PRINCIPLES OF SOCIAL LEGISLATION. By Mary S. Callcott. New York: Macmillan, 1932, 435 pp., $3.00.

ECONOMICS

COMPULSORY UNEMPLOYMENT INSURANCE: DEBATE HANDBOOK. Compiled by E. R. Rankin. Chapel Hill: Univ. of North Carolina Press, 1932, 91 pp., $.50.

PICTURE OF WORLD ECONOMIC CONDITIONS AT THE BEGINNING OF 1932. New York: National Industrial Conference Board, 1932, 303 pp., $3.00.

Current Periodicals

PREPARED BY LINDA H. MORLEY, *Industrial Relations Counselors, Inc.*

AGE

BARKIN, SOLOMON. Employment of the older worker—the economically middle aged and aged. *Journal of the American Statistical Association*, Supplement, Mar., 1932, Vol. 27, p. 102–108.

"To meet the problems of the economically middle aged, industry must openly avow its acceptance of the principle of preference for the economically middle aged for jobs at which they can be profitably employed, make intensive job studies to reveal possible openings for the older worker, develop a plan of employment adjustment, relax its discriminatory maximum hiring age policies, formulate the qualifications of new employees in terms of specific jobs to be filled, and assume its share of the older worker population."

BUDGETS AND COST OF LIVING

Comparative costs of living. *Information Service*, Apr. 16, 1932, Vol. 11, p. 1–4.

Survey made by International Labour Office for Ford Motor Company, Limited, to obtain information on cost of living in certain European cities as compared with Detroit, which in 1929 averaged $1,720 for the average family of 4.5 persons. Only one European city, Stockholm, showed need for expenditures higher than Detroit. In nearly all European towns provisions were made for insurance or sickness, while in Detroit there was no such provision.

HYDE, AGNES ROGERS. Where the money goes; what twenty New York families do with their incomes. *Harpers*, Nov., 1931, Vol. 163, p. 688–699. (Abstract in *Social Science Abstracts*, May, 1932, Vol. 4, p. 754.)

Survey covers incomes ranging from $4,000 to $15,000. Only the highest income group has a 100 per cent club membership among the men. Travel appears in only 2 budgets. All but 4 have automobiles. Only 3 families have no savings.

COLLEGE MEN IN BUSINESS

College graduates in business. *Personnel*, Feb.–May, 1932, Vol. 8, p. 67–127.

Supply and demand for college graduates, by R. I. Rees, J. E. Walters, and N. M. McKnight; What does industry seek in college graduates? by C. R. Dooley, A. M. Jones, J. F. Dwinell; Some fundamentals in industrial college employment programs, by F. S. Johnson, R. E. Doherty, J. R. Bangs; Providing information concerning business to college and university students, by W. H. Cowley, W. H. Winans, G. H. Estabrooks; Employment procedure, by C. S. Coler, R. C. Clothier, J. D. Beatty; Recruiting and training college men for selling, by Bevan Lawson.

ECONOMIC PLANNING

CLARK, J. M. Long-range planning for the regularization of industry: report of a subcommittee of the Committee on Unemployment and Industrial Stabilization of the National Progressive Conference. *New Republic*, Jan. 13, 1932, Vol. 69, pt. 2, 24 p. (Abstract in *Social Science Abstracts*, Apr., 1932, Vol. 4, p. 539.)

This report outlines the first requisite steps for introducing voluntary planning into the existing economic system.

GRAHAM, FRANK D. (Professor of Economics, Princeton University). Plan for abolishing unemployment. *Information Service*, May 14, 1932, Vol. 11, p. 2–3.

Summarization of a pamphlet issued by Princeton University. Author suggests setting up a rather complete economic system for unemployed people, to function in and with the general scheme now functioning for the employed workers.

TUGWELL, REXFORD S. (Professor of Economics, Columbia University). Economist's diagnosis. *Information Service*, May 14, 1932, Vol. 11, p. 1–2.

A definite statement of unpleasant truths which Dr. Tugwell claims are to a large extent disregarded at present.

EMPLOYMENT

CROXTON, FREDERICK E. (Columbia University), and CROXTON, FRED C. Fluctuation of employment in Ohio in 1930 and comparison with previous years. *Monthly Labor Review*, Mar., 1932, Vol. 34, p. 516–528.

Comparison is with previous six years. Covers 44,307 establishments. Tables give tabulations by months, industries, male and female employees, number of employees, number of establishments and occupation groups; and various combinations of above factors.

ENGINEERS

FRIEND, H. M. How many engineers are now employed? *Power*, Oct. 27, 1931, Vol. 74, p. 600–604. (Abstract in *Social Science Abstracts*, May, 1932, Vol. 4, p. 752.)

Mechanical engineers show greatest amount of unemployment, civil, electrical, and mining next in order. An analysis by geographical districts shows that about 10,000 engineers are out of work.

What do engineers earn? *Power*, Sept. 1, 1931, Vol. 74, p. 318–321. (Abstract in *Social Science Abstracts*, Apr., 1932, Vol. 4, p. 564.)

A summary of a study undertaken by the American Society of Mechanical Engineers.

FORD MOTOR COMPANY

LEVIN, SAMUEL M. (College of the City of Detroit). Ford unemployment policy. *American Labor Legislation Review*, June, 1932, Vol. 22, p. 101–108.

In April, 1931, the Ford Motor Company had 5,061 of its former employees on city doles, and the corporation itself, being located outside city limits, made negligible contributions to the tax fund out of which this money was taken. Instead of co-operation, the Ford Company in June attacked the policies and personnel of the city organization while they failed to answer questionnaires sent out with requests for the work records of every applicant at the Welfare Department. At the present time many Ford workers are eating at public soup kitchens, and thousands are reduced to dependence.

GROUP INSURANCE

GRAHAM, WILLIAM J. Group insurance. *Annals of the American Academy of Political and Social Science*, May, 1932, Vol. 161, p. 40–45.

Discussion of group life, group accident and health, group accidental death and dismemberment, and group annuities. During past five years volume of group life outstanding has increased 84 per cent), and number of employers protecting their employees has increased 171 per cent, while the total amount outstanding is estimated at $10,000,000,000 in 1931.

"Lay-off" may cancel group policy cover, unless employer acts; temporary discharge may affect policy just as permanent one would; Ohio Court of Appeals holds. *Eastern Underwriter*, Mar. 25, 1932, p. 18.

Unless employer does certain things to keep insurance in force during employee's layoff, the insurance is not chargeable against insurer, if he dies during this period.

HOURS OF WORK

Six-hour day in industry. *Service Letter on Industrial Relations*, New Series, No. 88, Apr. 30, 1932, p. 413–416.

Chief interest at present in shorter day is to increase possibilities of employment.

If hours are lessened the hourly wage rate will be reduced 25 per cent. Advantages to management would be increased production per hour, elimination of fatigue factor, saving from discontinuing cafeterias, etc. The biggest objections from employees are loss in earnings and peculiar working hours.

INCENTIVES

LEE, CHRISTOPHER A. (Director, Arthur H. Lee and Sons, Ltd.). Some notes on incentives in industry. *Human Factor*, May, 1932, Vol. 6, p. 180–182.

Considers best results are obtained when financial and non-financial incentives are combined. Believes the first problem is to select the right incentives and then "sell" the idea to the workers. In many organizations sense of loyalty to "chief" is an incentive, in others the sense of achievement, or the holding of shares stimulate interest.

INDUSTRIAL RELATIONS

APPLEGREN, GEORGE. Goodyear's industrial relations program. *Industrial Relations*, Mar., 1932, Vol. 3, p. 127–131.

Under present plan its industrial university, flying squadron, industrial assembly and 22 employee organizations are making for a happy and mutually profitable industrial relationship.

Church responsibility in industrial problems: a discussion conference based on eight cases of the assumption of such responsibility by organized church bodies. *Bulletin of the Taylor Society*, Apr., 1932, Vol. 17, p. 63–70.

Presented before a meeting of the Taylor Society, arranged by the Federal Council of the Churches of Christ in America, the National Catholic Welfare Conference, and the Central Conference of American Rabbis. Each "case" presented by a representative of the religious organization involved.

STARK, LOUIS. Woman mine owner shows hard-boiled operators that good wages and closed shops are a success. *United Mine Workers Journal*, Apr. 15, 1932, Vol. 43, p. 14–15.

Rocky Mountain Fuel Company's plan of industrial relations described by a reporter from the New York Times.

INDUSTRIAL RELATIONS—BIBLIOGRAPHY

Selected list of books on social subjects published in 1931. *Bulletin of the Russell Sage Foundation Library* No. 112, Apr., 1932, p. 1–4.

Not annotated but indicates where especially valuable reviews can be found.

LOANS

Employee loan plans. *Industrial Relations*, May, 1932, Vol. 3, p. 237–239.

Findings of a study made of 400 plans.

MORRIS, ARTHUR J. (Founder of the Morris Plan of Industrial Banking; Chairman, Morris Plan Corporation of America). Morris plan's contribution to the economic life and welfare of the wage-earner. *American Federationist*, Apr., 1932, Vol. 39, p. 401–411.

Traces evolution of modern banking system, with the development of the Morris Plan banks. Analyzes the two billion dollar loan business which is done by the system. Borrowers are mainly of the middle class, from 25 to 45 years of age. Many of the borrowers after liquidating obligations continue the installment payments in form of savings. Total of 80.2 per cent of borrowers had been employed 2 to 6 years on same payroll.

MACHINERY IN INDUSTRY

HUBER, CLYDE M. Displacement of labor by installation of automatic grade-crossing devices. *Monthly Labor Review*, Apr., 1932, Vol. 34, p. 759–769.

Gives short sketch of the development of automatic devices, with the changes taking place, which resulted in the loss of approximately 44,343 employment opportunities up to Dec., 1930. Illustrates with actual cases to show how automatic signal devices have displaced flagmen and watchmen, with resultant wage saving.

MANAGEMENT

COFFMAN, PAUL B. (Assistant Professor of Accounting, Harvard Business School). Testing for ability in management. *Harvard Business Review*, Apr., 1932, Vol. 10, p. 269–279.

Some of the tests are in organization and system of control, in the amount of planning and foresight, in the sequence of policy moves and the alternative policies and plans. Sometimes the ability in management lies chiefly in one person, but more frequently it rests with a combination of individuals.

Organizations for the promotion of management study. *Bulletin of the International Management Institute*, Dec.; Jan.; Feb.; 1931; 1932, Vol. 5–6, p. 223–228; 28–29; 57–59.

Describes the activities of the American Management Association; four French associations and the Taylor Society.

MORALE

KORNHAUSER, ARTHUR W., AND SHARP, AGNES A. (University of Chicago). Employee attitudes; suggestions from a study in a factory. *Personnel Journal*, Apr., 1932, Vol. 10, p. 393–404.

A personnel investigation carried on in the Badger-Globe Mill of the Kimberly-Clark Corporation, where a group of typical American women is engaged in routine factory work, showed that "some slight relationship was found between attitudes and measured facts about the workers. Correlations between favorableness of attitudes and individual scores for emotional adjustment are low but positive. The data are analyzed to find the sorest spots of dissatisfaction and worry. Fear of lay-off or loss of job entirely is most pervasive."

MAYO, ELTON. Problem of collaboration: address before the Personnel Club of New York, on February 3, 1932. *Management Review*, Mar., 1932, Vol. 21, p. 84.

Series of experiments carried on with group of girls in the Hawthorne Plant of the Western Electric Company. Changes were made in working conditions such as elimination and introduction of rest periods, lunch periods, change in hours of work, etc. Personal interviews with each employee resulted in decided increase in general morale. Concluded that most people like to talk over likes and dislikes with unprejudiced listener who allows the employees to see their own irrationalities and correct their own troubles.

OCCUPATIONS

Retail Credit Company. Printing industry; Confectionery; Manufacture of jewelry. *Industry Report*, Mar.; Apr.; May, 1932, Vol. 7, p. 23–27; 39–49; 51–62.

Health and safety hazards in these industries are pointed out. Occupational descriptions are given.

PENSIONS

BORDEN, ALBERT G. American trend toward annuities. *Annals of the American Academy of Political and Social Science*, May, 1932, Vol. 161, p. 27–32.

From the first annuity contract dated May 22, 1761, the business has grown until the present time when different forms of contracts are available. Some of these are the life annuity, which provides no death benefit; the refund annuity, which provides a similar return on reduced scale and provides that the income shall continue to a beneficiary in case of death before sum of income payments has equaled original premium; cash refund annuity; survivorship annuity; joint and survivorship annuity; and deferred annuity.

Railroad pension situation. *Industrial Relations*, Mar.; Apr.; May, 1932, Vol. 3, p. 133–136; 185–189; 247–251.

Arguments for and against the two employee pension bills now pending in Congress, and a study of the effect of awarding pensions to present employees upon completion of 30 years of service.

Summary comparison of pending bills. *Industrial Relations*, May, 1932, Vol. 3, p. 251–252.

A tabulation of the principal points in each bill.

PENSIONS—BIBLIOGRAPHY

STONE, EDNA L. (U. S. Department of Labor Library). Public old-age pensions in the United States: references, 1929 to 1931. *Monthly Labor Review*, Mar., 1932, Vol. 34, p. 738–746.

Annotated references to books, pamphlets and periodical articles. Special sections dealing with: proposals for federal legislation and state legislation and discussion. Supplements bibliography published in the May, 1929, issue of this periodical.

SAFETY

COOPER, S. I. (Manager, Southern Pacific Steamship Lines, New York). Value of organized effort against accidents. *Executives Service Bulletin*, May, 1932, Vol. 10, p. 5–6.

Describes safety education which was begun in the Southern Pacific Steamship Lines five years ago, with the specific purpose of reducing personal injuries. They first analyzed accidents of previous year, and made a survey of physical layout of all properties; then formed a committee of pier supervisors. Bulletin boards kept the employees posted as to the progress of the work. Results proved that nearly every accident is a preventable occurrence.

STABILIZATION

GAYER, ARTHUR D. (National Bureau of Economic Research). Financing the emergency public works program. *American Labor Legislation Review*, June, 1932, Vol. 22, p. 71–75.

Believes key to the problem lies in the public works activities of state, county and city government agencies, but that unaided they can do nothing to enlarge their construction expenditures. Thinks a federal bond issue of billions of dollars would be valuable not only for direct relief afforded, but would stimulate activities in building industries and all those supplying raw materials.

SIMONDS, H. R. Small plant outwits depression. *Iron Age*, Mar. 3, 1932, Vol. 129, p. 549–550.

Silent Glow Oil Burner Corporation doubled sales each year, with the invention of an oil burner which converts a kitchen range into an oil stove.

SPATES, T. G. (European Representative, Industrial Relations Counselors, Inc.). International planning of public works; a factor in the regularization of employment and economic relationships. Prepared in collaboration with the Geneva Research Center. *Geneva Special Studies*, Mar., 1932, Vol. 3, p. 3–24.

A survey of the current literature on the subject.

Stabilization in Pennsylvania: I. Regularization methods of the Leeds and Northrup Company; II. Upholstery industry; III. Report of the Interstate Commission on Unemployment Insurance. *Labor and Industry*, Dec.; Jan.; Mar.; 1931; 1932, Vol. 18; 19, p. 13–17; 4–16; 22–28.

Examples of different conditions in the stabilization problem met in appropriate ways.

STOCK OWNERSHIP

Confidence in stock purchase plans. *Service Letter on Industrial Relations*, New Series, No. 88, Apr. 30, 1932, p. 419.

Subscriptions for stock under the fourth stock acquisition plan of Standard Oil Company of New Jersey, authorized in June, 1931, have already reached 20,700. For every dollar deposited by employee, company adds 50 cents; the price of stock is adjusted every 6 months to market conditions and employees do not agree to purchase any specified amount, but make deposits in a fund up to 10 per cent of their pay.

Repurchasing employee stock. *Industrial Relations*, Mar., 1932, Vol. 3, p. 145.

Plans of seven companies.

UNEMPLOYMENT

COOLBAUGH, KENNETH (Superintendent, State Employment Office, Philadelphia).

What America's jobless are thinking today. *Nation's Business*, Apr., 1932, Vol. 20, p. 32–34, 84.

The author is of the opinion that most of the unemployed workers are thinking primarily about getting jobs, not about changing the social order.

MOTLEY, ARTHUR W. (Superintendent, Erie Employment Office; Director of Employment, State Emergency Labor Camps). Emergency labor camps. *Labor and Industry*, Mar., 1932, Vol. 19, p. 34–37.

Full description of a successful method of dealing with the unemployment situation by a state.

UNEMPLOYMENT INSURANCE

COWDRICK, E. S. Wisconsin tries unemployment benefits. *Nation's Business*, May, 1932, Vol. 20, p. 60, 62.

Wisconsin laws sets up reserves from contributions made entirely by employers. Each employer must pay into the fund an amount equal to 2 per cent of his payroll; after 2 years the amount is reduced to 1 per cent if the reserve amounts to $55 per employee. In order to draw benefits persons must register with public agencies, and must accept suitable work offered to them. If a company guarantees at least 42 weeks of work for a year in advance they are exempted from law.

KULP, C. A. Unemployment compensation in the United States. *Annals of the American Academy of Political and Social Science*, May, 1932, Vol. 161, p. 118–127.

Outlines American experience with unemployment insurance, the joint plans established by men and management, and the company plans, with a short summary of the Dennison system. Covers also American legislation proposals and particularly the Groves law.

RAUSHENBUSH, PAUL A. (University of Wisconsin). Wisconsin's unemployment compensation act. *American Labor Legislation Review*, Mar., 1932, Vol. 22, p. 11–18.

New statute to take effect on July 1, 1933, unless employers have by June 1, 1933, actually established plans which have been approved by State Industrial Commission. Law covers all employers who employ ten or more persons for at least 4 months in preceding year. Weekly benefit to employee is limited to 50 per cent of weekly wage, with $10 maximum and a $5 minimum.

WOLMAN, LEO. Unemployment insurance —its limitations and its promise. *Nation*, May 4, 1932, Vol. 134, p. 508–510.

Primarily a discussion of the English scheme.

VACATIONS

MITCHELL, M. E. Vacation clubs and camps. *Industrial Relations*, Mar., 1932, Vol. 3, p. 115–116.

Survey of the practices of 13 companies.

WAGES

COWDRICK, EDWARD S. Recent wage trends; the influence of certain characteristically modern factors. *Industrial Relations*, Apr., 1932, Vol. 3, p. 174–176.

Analysis of the fundamental aspects of the wage problem. An aid to clear thinking in this difficult subject.

Present wage situation. *Information Service*, Apr. 9, 1932, Vol. 11, p. 1.

Data from 24 manufacturing industries shows decrease in weekly earnings from $28.06 to $24.17, while office and shop employees earnings in New York State decreased from $29.99 to $26.57.

Two extraordinary wage adjustments. *Information Service*, Mar. 12, 1932, Vol. 11, p. 1–4.

In hosiery industry on Oct. 7, 1931, it was agreed that the union should take 30–45 per cent wage cut, and employers employing only union labor should operate without profit, in order to give competition to non-union plants. In the bituminous coal industry the union and management have cooperated to reduce union labor costs and permit the company to compete. Organized labor in

Colorado has helped the company to find market for coal in order to encourage "a promising plan of cooperation between the employer and its organized employes."

WORKMEN'S COMPENSATION

LESLIE, WILLIAM. Workmen's compensation insurance. *Annals of the American Academy of Political and Social Science*, May, 1932, Vol. 161, p. 98–104.

In period from 1923 to 1930, the country-wide deficiency reached nearly $145,000,000. These deficiencies exist despite efforts to reduce losses through accident prevention work, and the efforts exerted to keep rates equal to current cost conditions. This unusual condition is result also of tendency of state administrative bodies to interpret laws liberally in favor of the workmen. Countrywide rate level increased 11 per cent in 1931 as emergency program.

Objective and Subjective Tests for Noise

By H. M. Vernon and C. G. Warner, *London*

Two prominent British investigators bring to the readers of the Personnel Journal the results of their latest experiments on the effects of noise.

Experiments demonstrated that objective tests for the effect of noise, such as arithmetic tests and the determination of energy expenditure, were of very little value; but subjective tests gave striking results. The degree of subjective disturbance experienced was noted down when the subjects (a) read a psychology book, (b) performed an arithmetic test, and (c) performed a purely manual test. Observations in factories and offices showed that intermittent noises caused a good deal of disturbance during test (a), a slight amount during test (b), and very little during test (c).

IT IS often considered that noise in factories and offices has a harmful influence on the health and efficiency of workers, but very little exact information on the subject is available. Carozzi[1] stated that noise may cause a diminution of 60 per cent in industrial output, as well as an increase in labor turnover, but he gives no detailed figures to substantiate his statements. On the other hand, Laird[2] states that when a quiet office and a noisy office were compared the noisy office showed no disadvantage. Laird subjected four typists to a noise machine which emitted a sound similar to that made by an electric motor, with an auto-siren and a telephone bell sounding intermittently. The subjects typed for two hours each day for four weeks; during the first and last weeks the sounds were damped by sound-reducing panels. The physical intensity of the sound was measured by an audiometer, and the panels were found to reduce it by 20 per cent. The average speed of typing was 3.0 per cent greater under the quieter conditions, and the energy expenditure of the subjects was smaller.

[1] L. Carozzi. *Occupation and Health.* Brochure No. 129, 1928.

[2] D. A. Laird. Jr. Indust. Hyg., 1927, vol. 9, p. 431; and Jr. Nat. Inst. Indust. Psychol., 1929, vol. 4, p. 251.

AN ARITHMETICAL TEST FOR NOISE

In order to investigate the effects of noise in factories and offices, it is desirable to have tests which can be applied on the spot, and if possible the tests should be quantitative. Inasmuch as arithmetical tests are easiest to apply, we have made series of observations on the speed and accuracy with which we could work four-figure multiplication and division sums. Each sum

contained all the digits from 2 to 9, arranged in different orders, and for the multiplication test a list of 200 sums was constructed. Our method on each occasion was (a) to copy out eight or twelve sums, (b) to work through them at top speed, taking the time required with a stop watch, and (c) to correct them immediately, counting each sum either 'right' or 'wrong,' no matter how many errors made.

be rather tiring, it was done only on Mondays and Saturdays and on two of the intermediate days. More than one blank day was never taken, and this one day did not seem to affect the rate of improvement in speed.

It will be seen from figure 1 that subject A. took, at the outset, 237 seconds to do the test. Improvement was rapid at first and then more slow, till a minimum time of 187 seconds was

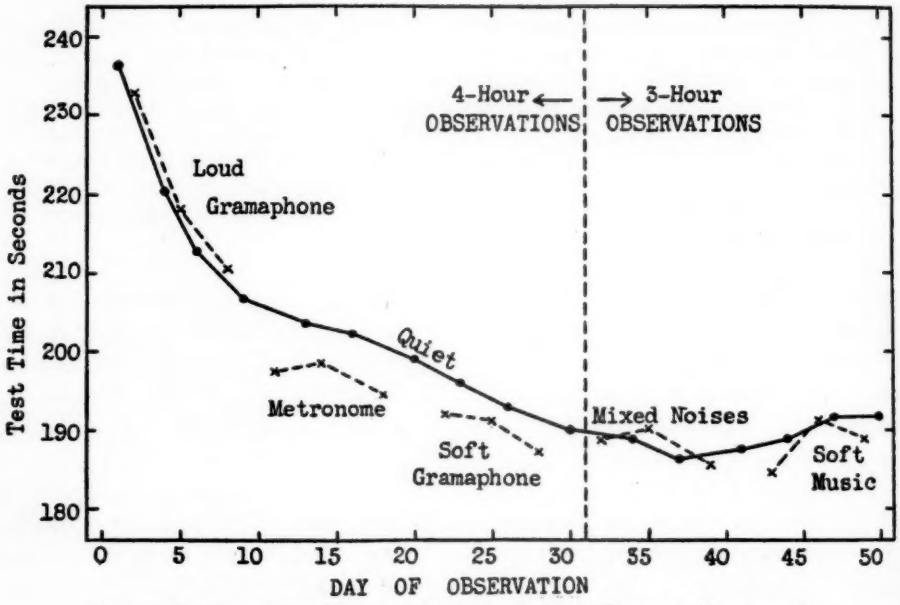

FIG. 1. INFLUENCE OF VARIOUS NOISES ON TEST TIME OF SUBJECT A

Preliminary observations showed that there was gradual adaptation to noise, so in order to secure full adaptation a long experimental period was used. The test was worked through for four hours continuously, except that a rest pause of 5 minutes was taken after each 55 minutes of work. The test was performed under quiet conditions and noisy conditions on alternate days, and as it was found to

attained on the 37th day. Then deterioration set in, probably because the test was now being done for three hours each day instead of four hours, thus diminishing the period of practice. At first the speed of working the test slowed down from hour to hour during the four-hour stretch, but from the 9th day onward a nearly even speed was maintained. The number of mistakes made was fairly steady

throughout the series, the average being 1.1 mistakes for each eight sums.

In the first series of noise experiments a loud gramophone record of music was played on three days, and on an average the test time was 1.0 per cent longer than on the quiet days; but this increase was due almost entirely to the increase of test time (viz., 4.9 per cent) which occurred in the first hour of the noise experiments. In the subsequent three hours there was a slight decrease (0.3 per cent) in the test time. Also there was no increase in the number of mistakes made, as compared with quiet days.

In the next series the noise selected was made by a metronome ticking at its fastest rate (217 single ticks per minute). The metronome stood about eighteen inches from the subject. It was found that the subject was quicker during each hour of each of the three mornings than in the corresponding quiet observations, the average time taken being 2.9 per cent less, while his mistakes were nearly the same as in the quiet observations. The noise used for the next series was soft gramophone music. As shown in figure 1, this soft music was accompanied by improvement in speed of the subject on every occasion, the average reduction of test time being 2.1 per cent. In the final series of observations the subject submitted to soft but varied music, and this caused a slight improvement of test time on two of the three days. He was not at all distracted by the music, and it looks as if a suitable choice of music might increase the efficiency of performance of a semi-mechanical job without causing appreciable disturbing effects. An instance is recorded[3] in which the works manager at a factory installed a gramophone in the warehouse department, and when the girls had to work overtime he generally got a request for the gramophone. He is confident that it assisted in making them happy and contented.

In the next to the last series the subject was submitted to loud mixed noises made by an assistant who performed vigorously on a police whistle, dinner bell, piano, bicycle bell, gong, mouth organ, tea tray, siren, and tambourine at irregular intervals interspersed with brief periods of silence. These noises were made behind a thin screen, two feet from the subject. The observations lasted three hours each day instead of four, and it will be seen from figure 1 that on an average they had no effect on speed of performance. They likewise had no effect on the number of errors made, but they did cause a considerable degree of mental disturbance or distraction.

Subject B., in his main series of observations, performed a division test for three hours each morning for a 34-day period. The test consisted in dividing four figures into four other figures, which between them comprised all the digits from 2 to 9. The dividend was always smaller than the divisor, so as to yield a decimal quotient, and this was worked out to four figures. The subject did twelve sums in each test, and on quiet days he took at first 212 seconds to perform the test, but finally only 141 seconds. He got about one sum wrong in each set, and the

[3] *Industrial Welfare*, Oct., 1929, p. 366.

mean test time and number of errors were fairly steady during the three successive hours.

The various noises investigated were always accompanied by a reduction in the test time. Gramophone music of medium loudness, played on three days, reduced it 2.0 per cent, while soft gramophone music reduced it 1.3 per cent. The quick metronome (3 days) reduced it 0.3 per cent, while a loud electric bell (4 days) reduced it 2.6 per cent. The bell was placed 1.5 feet from the subject, and was rung intermittently for periods of 0.5 to 2 seconds, with pauses of 0.5 to 60 seconds.

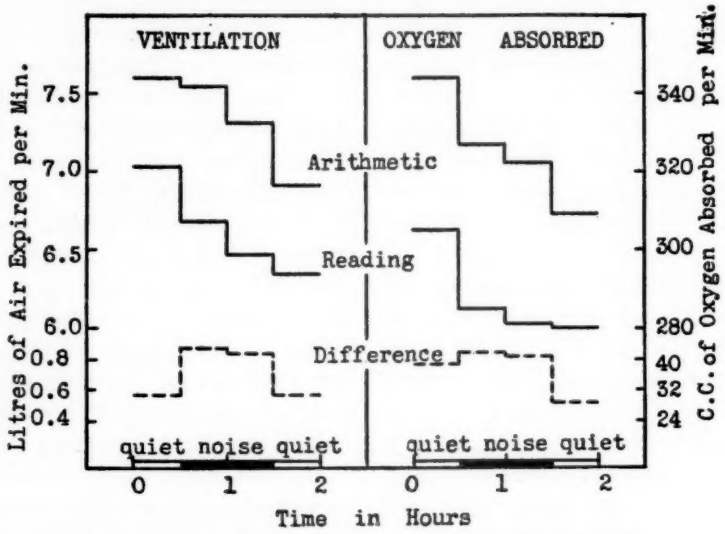

FIG. 2. INFLUENCE OF NOISE ON ENERGY EXPENDITURE

THE INFLUENCE OF NOISE ON ENERGY EXPENDITURE

In the observations previously referred to, Laird measured the effects of noise on the energy expenditure of his four typists. He got them to sit quietly for half an hour in the position assumed when typing, and at the end of this period collected samples of expired air. The subjects then began to type simultaneously with the starting of the noise machine. This was continued for two hours, a sample of expired air being collected every 15 minutes. On an average, the energy expenditure of the typists, when they were subjected to the noise machine in a room with sound-absorbing panels, was 51 per cent greater than when they were resting, while it was 71 per cent greater when they typed in a room without panels.

In our own observations the subject sat quietly at a table, and for a preliminary period of 20 minutes he read a book. He then expired for half an hour into a 350-litre Douglas bag, and during this time he either read a difficult text book on psychology, or he did the arithmetic test previously described. At the end of the half-hour the bag was changed, and during the

next half-hour he was subjected to the noise of the loud electric bell, placed 1.5 feet away. The bell was rung irregularly for periods of 0.5 to 2 seconds, alternating with quiet periods of 0.5 to 2 seconds. The noise was continued during the third half-hour, while quiet conditions were reverted to in the fourth half-hour. Three experiments were made with each subject when reading and three when doing the arithmetic test, and the volumes of air expired were measured and samples were analyzed in duplicate. As the results obtained with the two subjects corresponded well, they were averaged. It will be seen from figure 2 that the mean energy expenditure, as estimated by the cubic centimeters of oxygen absorbed per minute, was greater during the performance of the arithmetic test than during the reading test, the excess ranging from 10 to 15 per cent. This was to be expected, as the former test involved a certain amount of muscular movement, while there were practically no muscular movements during the reading. The data obtained in the reading test indicate that the oxygen absorbed during the two noisy half-hours was only 1 per cent greater than during the final quiet half-hour, though it was 7 per cent less than during the initial half-hour. There can be no doubt that the subjects did not rest sufficiently long, before the collection of their expired air, to attain a fair measure of resting metabolism, so it is better to rely chiefly on the final quiet period for the measure of this metabolism. It follows, therefore, that the noise of the electric bell was associated with, at most, an increase of 1 per cent in the oxygen absorbed.

During the performance of the arithmetic test the noise did have a slight effect. The oxygen absorption during the two noisy half-hours was 0.5 per cent less than during the two quiet half-hours, but if we take the final quiet half-hour as our standard, the noisy half-hours show an increase of 5 per cent. This is 4 per cent more than the increase shown during the reading test, and it is too large to be due to experimental error. The data plotted in figure 2 show most distinctly that the differences between the oxygen absorption in the arithmetic and the reading tests were increased during the noisy half-hours, while the differences in the total ventilation give an even clearer indication. Part of the increase of energy expenditure is due to the fact that the subjects did the arithmetic test rather more quickly during the noise, for they took 1.8 per cent less time over the test than under quiet conditions. In any case, the effect of noise on energy expenditure is so small that its estimation is useless as a routine test. The arithmetic test previously described is equally useless, for we saw that though noises generally increased the speed with which the test was performed, they did this only after the subjects had become to some extent adapted to them. Moreover, there can be little doubt that noises exert a retardation on speed if only they are sufficiently loud and irregular. It seems likely, therefore, that it will prove to be impossible to discover a convenient objective test for noise, and that we shall be driven to employ subjective tests. Such tests are inaccurate, and vary considerably with different subjects, but they show such striking differences and are so easily

applied that they are undoubtedly of value.

SUBJECTIVE TESTS FOR NOISE IN FACTORIES AND OFFICES

In the course of the arithmetic tests above described, and in those made in factories and offices, the subjects noted down the extent to which they were disturbed or distracted by the noise in accordance with the following scale:

Noise caused no disturbance = 0.
Noise caused slight disturbance = 1.
Noise caused moderate disturbance = 2.
Noise caused considerable disturbance = 3.
Noise caused very considerable disturbance = 4.

For instance, the noise of the quick-ticking metronome caused an average disturbance of 1.9 (or nearly 'moderate') in subject A., but one of 1.1 (or nearly 'slight') in subject B. When other tests were performed the degree of disturbance induced by a given noise was found to be greater and greater the more the higher mental faculties were involved in carrying it out. The most convenient and sensitive test of all was found to be the reading of an unfamiliar psychological text book. Concentrated attention was therefore necessary in order that the argument might be followed, and as the result of four half-hour tests made by each subject, it was found that the noise of the quick metronome caused an average disturbance of 3.0 and 2.6 respectively (or nearly 'considerable'). On the other hand, when a mechanical test was performed which involved practically no thought, the disturbance created by the metronome was very small. The test consisted in the assembly of bicycle chain links at top speed, and the average disturbance experienced by the two subjects in four half-hour tests was only 0.3 and 1.0.

One of our factory investigations was made in the bar chocolate department of a large chocolate factory. Here hot semi-fluid chocolate was run into metal moulds, and in order to expel air bubbles these moulds were passed slowly along a moving band which was violently shaken by mechanical means. This shaking made so much noise that it was impossible to make oneself audible without shouting two inches from the ear of the intended recipient of the remark. The room was necessarily kept very hot, and when we made our tests the temperature averaged 84° (d.b.) and 70° (w.b.). We sat in the room for three hours in the morning and two hours in the afternoon, and performed the arithmetic test and read psychology during alternate half-hours. The disturbances created in the successive test periods were as follows:

Reading psychology:
Subject A, 2.5, 1.0, 1.0, break, 1.5, 1.5.
Subject B, 2.5, 1.5, 1.0, break, 1.0, 1.5.

Arithmetic test:
Subject A, 0.7, 0.4, 0.4, break, 0.4, 0.4.
Subject B, 3.1, 1.4, 1.1, break, 0.8, 0.8.

It will be seen that though the subjects were disturbed a good deal during the first hour, they afterwards settled down to a condition of rather more than 'slight disturbance' when reading psychology, and of less than this condition when doing arithmetic.

The warm moulds of chocolate passed through an artificially cooled tunnel so as to solidify the chocolate,

and on emergence they were banged on a board of hard composition material in order to remove the bars. The bangs made a sharp, semi-metallic sound. We sat at a distance of 5 to 13 feet from five girls engaged in the knocking out process, so we were continuously subjected to the noise of rapid but unrhythmical bangs. The total volume of sound was nothing like that occurring in the moulding room, and conversation could easily be carried on in the ordinary voice. one time or another in the year preceding our visit, not one asked for a transfer because of the noise or for any other reason. On the other hand, 8 of the 24 girls who worked in the moulding room asked for a transfer, 7 of them because of the heat and one because of the noise, so it cannot be said that the noise experienced in these two departments had a definitely adverse effect on any of the workers. It should be noted that the firm treated their workers very sympathetically,

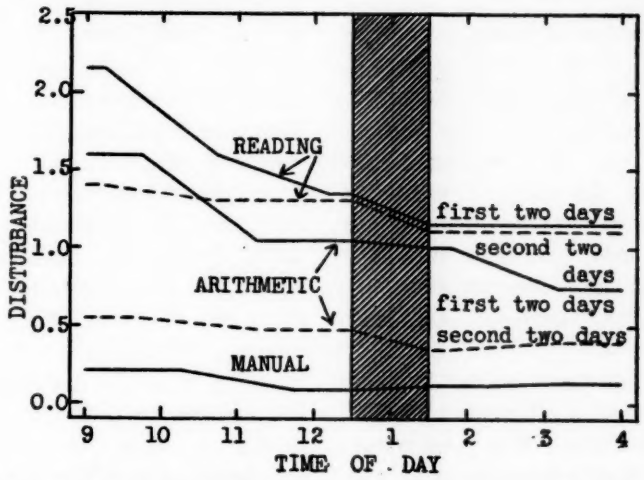

FIG. 3. DISTURBANCE EXPERIENCED IN NAIL-MAKING FACTORY

Yet the disturbance induced in both subjects was considerably greater, as is shown by the following figures:

Reading psychology:

Subject A, 2.5, 3.0, 3.0, break, 3.0, 3.0, 3.0.

Subject B, 2.5, 2.5, 2.5, break, 3.0, 3.5, 3.0.

Arithmetic test:

Subject A, 0.5, 0.6, 0.6, break, 0.7, 0.7.

Subject B, 1.0, 1.0, 0.9, break, 1.0, 1.0.

We found that of the 49 girls who worked in the knocking out room at and at once granted requests for transfer.

Other observations were made in a large nail-making factory. Subject B sat for four days in the main room, where there were about 30 men and an equal number of women employed on machines making nails and tacks for boot and shoe manufacture. The noise was continuous, and it was so deafening that no conversation was possible. The subject performed the reading, the arithmetic and the chain-

assembly tests in successive half-hours, and he found that the disturbance caused by the noise dwindled during the course of the day, and also from day to day. The average results of the first two and second two days, so far as they relate to the reading and the arithmetic tests, are plotted in figure 3. The subject also reacted less on the last days than on the first when doing the chain-assembly test; but as the effect was at all times very small the results of all four days are averaged in the figure.

There can be no doubt, therefore, that subject B. became rapidly adapted to the noise while he was in the machine shop, and the workers themselves did not appear to be bothered by the noise. Very occasionally a new worker would object during the first few days, but after the first week there were no complaints, and the labor turnover was practically nil.

At another factory subject A. tested the high-pitched noise made by elastic braiding machines. The noise was so loud that it was possible to make oneself heard only by shouting loudly within a foot of the recipient's ear. The subject sat in a machine room 160 feet by 50 feet in area, and performed the reading and the arithmetic tests in alternate half-hours. He sat for four hours in the morning and three in the afternoon, the average disturbance experienced being 0.9 during the reading test and 0.2 during the arithmetic test.

The subjective test method was applied in two of the offices occupied by the clerical staff attached to a large factory. Each of these rooms, 73 by 68 feet in area, contained over 50 clerks. The two subjects sat in one office, about 12 feet from the women using typewriters and some rather noisy 'posting' machines, for eight half-hour periods, when they alternately read psychology and did the arithmetic test. The disturbance experienced averaged 1.6 during the former test and 0.4 during the latter. In the other office most of the clerks were doing purely clerical work, but there were six women working 'tagging' machines, which print numbers, etc., on small labels. These machines make a loud jerking noise about once every four seconds, and as the women were working independently the noise was very irregular. The two subjects found that when they sat 10 feet from the machines the disturbance experienced during the reading test averaged 2.7 for each of them, and during the arithmetic test, 0.8 and 0.6 respectively. When they sat 35 feet away, however, it fell to 1.0 and 1.2 during the reading test, and to 0.5 and 0.6 during the arithmetic test. Many of the clerical staff in this office, and especially those sitting near the tagging machines, had complained that they were disturbed by the noises in the office, so there can be little doubt that their efficiency would have been increased if the women working the tagging machines had been removed to a separate room. On the other hand, the clerks in the typewriting office appeared to be but little affected by the noise of their machines.

SUMMARY

As an objective test for noise, two subjects worked through mul-

tiplication or division sums for a four- or three-hour period under quiet conditions and under noisy conditions on alternate days. The noises investigated either had no effect on speed of performance or they accelerated it. However, the noises caused subjective disturbance or distraction which, when systematically recorded, proved to be a valuable test for noise.

The energy expenditure of two subjects was investigated for an initial and a final half-hour, and for an intermediate hour when an electric bell was rung intermittently. When the subjects were reading the noise had no effect whatever, but when they were doing arithmetic the noise was accompanied by a 4 per cent increase in oxygen absorption.

When investigating noises in factories and offices, the subjects read a psychology text book and worked the arithmetic test in alternate half-hours, and recorded the subjective disturbances experienced. They found that very loud noises, if fairly uniform, had comparatively little effect, especially when the arithmetic test was being worked; but intermittent noises caused a good deal of disturbance, especially to the reading of psychology.

The industrial workers investigated very seldom objected to noises, even when they were extremely loud. This conclusion accords with the fact that noises caused very little disturbance to the subjects of this investigation when they were performing a purely manual test.

Manuscript received January 17, 1932

Measuring Vocational Guidance

A Summary of Attempts

By Harry D. Kitson and Edgar M. Stover, *Teachers College, Columbia University*

How effective is the vocational guidance carried on during the past quarter century? The answer can come only in terms of follow-up studies of people who have been guided. A number of workers have put their efforts to this rigid test. Their reports are summarized in this article.

Workers in vocational guidance have made many attempts to evaluate objectively the effectiveness of their efforts. This article summarizes the investigations that have been made, giving briefly the essential points concerning each report. They are grouped as follows: studies concerned with the gathering of information about occupations; with imparting information about occupations; with counseling of individuals; with placement and follow-up. In spite of the many difficulties standing in the way of evaluation, a number of investigations show such favorable results that vocational counselors can find encouragement to continue their efforts.

ORGANIZED vocational guidance has been in existence only a short time, and so has not had an opportunity to furnish many proofs of its value. Indeed, like education, religion, and many other forms of ameliorative service, it will forever evade exact evaluation. One reason for this is that it deals with problems of great complexity; the vocational adjustment of an individual involves such diverse factors—physical, psychological, social, and economic—that it is difficult to secure quantitative evidence relating to all.

Another circumstance that impedes the desired measurements is that vocational guidance demands, for its fruition, the passing of years. Directed as it is toward an adjustment sometime in the future, its effects can not be seen until a long period of time has elapsed and the individual has passed from under the observation of the individual or agency that gave the guidance.

Still more perplexing is the question, What shall one use as a criterion (unit of measurement) in determining the adequacy of the adjustment of an individual? The criteria commonly used are earnings, quantity or quality of output, rate of promotion, length of time on the job, estimates of employers, and the like—all obviously imperfect.

In spite of these obstacles, a few vocational counselors have been brave enough to subject their efforts to evaluation. Some of them have found specific evidence of the value of their work; others, while not establishing valid proofs, have nevertheless contributed to the methodology of measurement. This paper represents an attempt to assemble and summarize the efforts at measurement that have been reported in the literature.

It should be stated at the outset that we have not included investigations designed to determine the validity of psychological tests, rating scales, or any other *tools* of vocational guidance. Neither have we included reports of placement offices or evaluations of vocational training unless the placement or training was preceded by definite counseling. We have omitted investigations directed toward the measurement of general educational guidance (such as is carried on through sectioning of classes, advising regarding courses, etc.), divorced from vocational guidance. Naturally, no reports of experiments in selecting employees are included. In short, this summary deals exclusively with investigations designed to show the value of services strictly classed as vocational guidance.

A still further restriction remains to be mentioned. Since we are dealing only with attempts to prove the value of vocational guidance scientifically, we have omitted *a priori* statements regarding the worth of vocational guidance, and also general arguments advanced in its behalf.

Before beginning our summary, we shall describe several attempts to set up standards by which to estimate the value of a bureau or a plan of vocational guidance. We have not included them in the body of the report since they represent proposals rather than attempts at measurement. Furthermore, they do not conform to the strict criterion we have adopted; namely, that the effects of guidance can be measured only in terms of changes in the persons who have received the guidance. As will be observed, most of the proposals are directed toward the appraisal of the alleged provisions for giving vocational guidance in a school system. Again, most of them call for opinions regarding the value of vocational guidance services, and not for objective evidence. Under any circumstances, they do not fall within the strict confines of this paper, but they are given brief mention for the sake of historical completeness.

PROPOSALS FOR MEASURING A PLAN OF VOCATIONAL GUIDANCE

G. E. MYERS. *Some Tentative Standards for Judging a Comprehensive Guidance Plan.* Printed by Department of Vocational Guidance, Pittsburgh Public Schools, 1926.

The first recorded proposal for the evaluation of a program of vocational guidance in a city school system was made by Myers in 1926. It suggests four criteria: completeness, as measured by the number of activities carried on; distribution of emphasis, as shown by the relative amount of time and attention devoted to each activity; thoroughness, revealed by the kinds and quality of work done; and consistency of organization.

As indispensable activities, Myers

lists: imparting occupational information, try-out courses, analysis of individuals, individual counseling, courses for training in certain occupations, placement, and supervision during employment. He goes further and breaks up the various activities into units, each being given a certain number of points toward a final rating for the school system.

FRESNO SCHOOL SURVEY COMMITTEE. A *Study of Vocational Conditions in the City of Fresno.* University of California, 1926, pp. 172–73.

In the same year when Myers' proposals were made, appeared a suggestion, credited to W. R. Hepner, aimed at evaluating not only vocational, but also social and educational guidance. It consists only of an outline, no evaluations being actually made.

A. H. EDGERTON. *Evaluating the Effectiveness of Guidance Practices. Nation's Schools,* 1929, vol. III, no. 6, pp. 38–42.

A list of activities essential to a complete program of vocational guidance was formulated by Edgerton on the basis of judgments made by eighty-eight experts in the field. The list follows:

Guidance activities provided	*Actual number of pupils served (basis 100)*
1. Aiding pupils to obtain adequate, reliable and significant information concerning occupations	81
2. Providing exploratory experiences as an aid to pupils in testing their fitness for certain educational and occupational divisions, and as an aid to teachers in discovering pupils' interests and abilities	52
3. Collecting and making available for use pertinent information concerning the abilities, aptitudes, temperaments and personality characteristics of individual pupils	46
4. Assisting individual pupils to evaluate occupational information and the results of exploratory experience in terms of their personal abilities, interests, and characteristics, and helping them to plan their vocational preparation	63
5. Providing vocational education possibilities for pupils to prepare for the occupations they have chosen	71
6. Aiding pupils seeking placement to obtain advantageous entry into the occupations chosen	88
7. Helping the pupil through employment supervision to progress in his occupation if it proves suitable, or to change if it proves unsatisfactory	13

The author then computed the percentage of pupils among 4500 children in 143 cities who were served by each of these activities. The amounts range from 88 per cent receiving aid in finding a position in the occupation chosen, to only 13 per cent who were followed-up.

R. A. HINDERMAN. Evaluating and Improving Guidance Services. *Nation's Schools,* 1930, vol. V, pp. 47–52.

Using a list of activities similar to that proposed by Hepner, Hinderman asked school executives and specialists in guidance to rank twenty-five statements representing "standards" which should comprise a scale for evaluating services of guidance—educational and

social as well as vocational. Replies were received from 378 persons in 259 cities of 20,000, or greater, population. We shall reproduce final rankings of the first ten and last two:

Standards for evaluating the success of guidance

	Rank
Industry should demand more of high schools pupils	1
The guidance staff is improving the service through research and experimental problems	2
Pupils are entering industry according to some organized plan	3.5
More pupils are assisted in school adjustment each month	3.5
More pupils complete a definite high school program	6
Fewer students now fail in college after attending from one to three years	6
More pupils are making use of guidance services in planning their careers	6
Functional adjustment has reduced the number of cases of truancy and tardiness	8
More high school graduates are earning a grade of B, or above, in college	9.5
More pupils are being provided with concrete home and work experiences	9.5
(The intervening items omitted for lack of space.)	
More graduates are satisfied with the completeness of their high school preparation	24
Employee progress reports indicate a higher standard for more cases	25

WILLIAM M. PROCTOR. Evaluating Guidance Activities in High School. *Vocational Guidance Magazine*, 1930, vol. IX, pp. 58–66.

In 1930 appeared a score card developed by Proctor and others, for evaluating educational and vocational guidance plans in secondary schools. General headings are: Organization; Devices, Agencies, and Techniques; Placement and Follow-up; Penalties. These are subdivided into numerous elements, the total score being 1000 points.

Criteria similar to the above are also found in the following publication: Criteria for Measuring the Efficiency of Counseling. *Guide for Counseling in the Secondary School.* California State Department of Education. Bulletin No. C-9, 1931, pp. 56–61.

G. N. KEFAUVER, AND H. C. HAND. Measurement of Outcomes of Guidance in Secondary Schools. *Teachers College Record*, 1932, vol. XXXIII, pp. 314–334.

A proposal to measure outcomes of guidance in general—educational, social, moral, as well as vocational—in terms such as: "proportion of pupils with educational plans"; "amount of maladjustment toward the home"; "nature of reasons for dropping out of school," etc. Thirty-four such "outcomes" are to be applied to the school or system being measured.

In presenting the varied investigations that represent actual measurement of vocational guidance in terms of the changes made in the persons advised, we shall group them under the various functions of vocational guidance. These, as generally recognized, are: gathering information about occupations; imparting information about occupations; counseling of individuals; placement and follow-up. In adopting this arrangement we do not mean to imply that these functions work independently of each other in

actual guidance; but we hope, by means of this grouping, to show which areas have been neglected in the investigations that have been made.

I. DETERMINING THE VALUE OF INFORMATION GATHERED ABOUT OCCUPATIONS

MARY C. SCHAUFFLER. Standards for Evaluating Occupational Studies. *Vocational Guidance Magazine*, 1926; vol. IV, pp. 340-344.

Schauffler suggests a plan for evaluating, in qualitative terms, the monographs based on occupational investigations made by various bureaus of Vocational Guidance. Categories used are: point of view; contents; style; mechanical make-up.

MAY ROGERS LANE. Reviews of Occupational Studies; in *Occupational Studies*. Scranton: International Textbook Company, 1927, pp. 47-81.

This is an application (to vocational monographs) of the standards proposed by Schauffler, all by way of descriptive analysis.

R. WOELLNER, AND R. L. LYMAN. Evaluating Books on Vocational Guidance. *School Review*, 1930, vol. XXXVIII; pp. 191-199.

The authors developed a score-card for use in weighing the merits of textbooks prepared for classes in Occupations. One thousand points are to be distributed over three headings: content; mechanical make-up; composition and rhetoric—with numerous subdivisions. Twenty-six books were graded according to this score-card.

G. N. KEFAUVER, AND J. R. WIEHOFF. Analyses of General Books on Occupations. *Vocational Guidance Magazine*, 1930, vol. VIII, pp. 355-365.

A quantitative analysis of textbooks for classes in Occupations, according to an outline with three main headings: general guidance considerations; types of information on specific occupations; special features of the book. There are numerous subdivisions under each heading. Seven standard texts were analyzed in terms of the amount of space devoted to each topic. "A decile scale was prepared for each of the books analyzed. Each item of information was recorded by tenth of page." Emphasis was not placed on evaluating one book higher than another, but merely on the amount of attention and emphasis given to the various topics in each book.

II. MEASURING INSTRUCTION GIVEN IN CLASSES IN OCCUPATIONS

MILDRED E. LINCOLN. Educational and Vocational Guidance in Secondary Schools. Published in *The Work of the Public Schools, Rochester, New York*, 1928, pp. 528-535.

Auspices: Public Schools, Rochester, New York.

Subjects: 158 pupils in Grades 8B and 9A, who took a course in "guidance," given once a week; 65 in control group who had no such course.

Specific Question Investigated: To measure the information about educational and vocational opportunities gained through a "guidance" course.

Criteria: Scores on (a) Brewer and Lincoln Educational Information Test, and (*b*) Brewer and Lincoln Vocational Information Test. (These Tests in revised form are sold by C. H. Stoelting Company, Chicago, Ill.)

Findings: Median score made by pupils who took guidance course: Test (a), 39; Test (b), 118. Median score made by pupils

who did not take course: Test (a) 32; Test (b), 112. The pupils who took the course made higher scores than those who did not take it.

J. W. HEDGE, AND PERCIVAL W. HUTSON. A Technique for Evaluating Guidance Activities. *School Review*, 1931, XXXIX, pp. 508–19.

Auspices: Public Schools, Windber, Pennsylvania.

Subjects: 201 high school students—79 seniors and 122 juniors—who were given a year's course in choosing a vocation, supplemented by individual counseling.

Time elapsed: 1 school year.

Specific question investigated: Did the course (supplemented by individual counseling) result in wiser choices of occupations?

Criterion: Were the final choices more nearly in accord with the abilities of the pupils than the first choices?

Findings: Between September and May, the number of pupils planning for college training and professional careers was reduced 5.5 per cent; the number planning to enter skilled trades increased 4.5 per cent. Students with the lower I.Q.'s who had planned to enter college, changed their plans. Before guidance, the median I.Q. of students who planned to go to college was 108.1; after guidance, it was 111.4.

III. MEASURING THE RESULTS OF INDIVIDUAL COUNSELING

RUTH CLARK. An Experiment in Educational Guidance. *Vocational Guidance Magazine*, 1923, vol. 1, pp. 93–94.

Auspices: Vocational Service for Juniors, New York City.

Subjects: 556 boys and girls who left the eighth grade.

Time elapsed after advisement: One and a half years.

Specific question investigated: Did the individuals who followed the advice of the counselor succeed better than those who did not follow the advice given?

Criterion: Opinion of the investigator, based on interviews.

Findings: Of those who followed the counselor's advice, 80 per cent were successful. Of those who did not follow advice, only 61 per cent were successful.

CYRIL BURT AND OTHERS. A Study in Vocational Guidance. Industrial Fatigue Research Board, Report 33; London: 1926.

Auspices: Industrial Fatigue Research Board and National Institute of Industrial Psychology.

Subjects: 100 children (52 boys, 48 girls), approximately fourteen years of age. Before leaving the elementary school, they had been examined from physical, psychological social and economic points of view, and then advised regarding the occupation they should enter.

Time elapsed after advisement: Two years.

Specific question investigated: To determine whether the guidance given led to successful adjustments.

Criteria: Employment in the occupation advised; satisfaction with the occupation entered; prospects for advancement; earnings; number of changes of job; reports of employers.

Findings: Eighty per cent of those who followed advice declared themselves satisfied with their work, prospects and pay. Less than 40 per cent who did not follow the advice given reported themselves satisfied. Earnings of those who entered employments advised were slightly higher than those of the children who did not follow advice. Of those who had followed advice, 43 per cent had changed jobs; while of those who did not follow advice, 61 per cent had held two or more jobs; 12.5 per cent had held four or five jobs. Those who followed advice obtained promotion sooner than those who did not follow advice.

A. G. CHRISTIAENS. Verification de la Valeur du Prognostic Etabli Suivant la Methode d'Orientation Professionnelle de Bruxelles. Bulletin Trimestriel de l'Office Intercommunal pour Orientation Professionnelle, 1928, VIII, pp. 1–22.

Auspices: Intercommunal Bureau of Vocational Guidance, Brussels, (Belgium).

Subjects: 607 children advised on leaving

elementary school, generally to enter apprenticeships; 391 available for follow-up.

Time elapsed after advisement: 5 to 6 years.

Specific question investigated: How many succeeded of those who followed the advice given?

Criterion: Opinion of investigator, based on reports from persons advised, from parents and employers.

Findings

	Total	*Number who succeeded*	*Per cent*	*Number who failed*	*Per cent*
Number who followed advice given.....	211	207	98	4	2
Number not advised against or for the vocation entered.	78	57	73	21	27
Number who entered a vocation against advice.....	102	12	9	90	91
	391				

MORRIS S. VITELES. Validating the Clinical Method in Vocational Guidance. *Psychological Clinic*, 1929, vol. 18, pp. 69–77.

Auspices: Psychological Clinic, University of Pennsylvania.

Subjects: 75 adolescents examined and counseled during 1923 and 1924.

Time elapsed after advisement: 2 to 2.5 years.

Specific question investigated: Number who followed advice and succeeded.

Criteria: Whether subjects were engaged in activity prescribed; number of jobs held; earnings; academic grades.

Findings: 58 per cent followed recommendation completely; 21 per cent partly. None who followed advice failed to find employment; only 7 had held more than two jobs. Those who failed to follow advice in employment were earning more money but most were in "blind alley" jobs. Of the children still in school, there were more failures among those who had not followed advice.

ANGUS MACRAE. A Follow-up of Vocationally Advised Cases. *Journal of the National Institute of Industrial Psychology*, 1930, vol. V., no. 5.

Auspices: National Institute of Industrial Psychology, London.

Subjects: 33 boys ranging in age from 15 to 20 years.

Time elapsed after advisement: 3 years.

Specific question investigated: Are those who followed advice satisfactorily placed; are those who did not follow advice unsatisfactorily situated?

Criterion: Judgment of investigator after interviewing boy.

Findings: 19 of the boys (57 per cent) followed advice, and 14 (43 per cent) entered occupations not recommended. Of the first group, the number who were unquestionably satisfied was eighteen; one's case was doubtful. Of the second group, the number who were definitely satisfied was three, or 21 per cent. Altogether, this investigation reports 85 per cent of successful predictions.

F. M. EARLE AND OTHERS. *Methods of Choosing a Career.* London: George C. Harrap & Company, 1931.

Auspices: National Institute of Industrial Psychology.

Subjects: 600 children ready to leave school, examined and advised by the Institute. Control group of 600. All were approximately fourteen years of age.

Time elapsed after advisement: 2.5 to 4 years.

Specific question investigated: To discover the degree to which the children had been successful.

Criteria: (a) Length of tenure in the post; (b) employer's report upon the child's efficiency; (c) child's liking for the work; (d) reasons for giving up the post.

Findings: "In regard to recommended occupations, the boys and girls of the experimental group (a) tend to keep them longer, (b) tend to give satisfaction to employers more often, and (c) tend to be more satisfied themselves than do boys and girls of the control group; which indicates the

greater helpfulness of the Institute's procedure of advising compared with that of the school conference."

Descriptive case studies

There are several attempts to show the fruits of vocational advisement in terms of descriptive case studies, but since these contain no statistical data, they cannot be summarized according to the pattern adopted here. A typical reference will be cited:

FRANK J. O'BRIEN. Results of a Guidance Program as Exemplified in Case Studies. *Bull. of Natl. Catholic Education Assn.*, 1931, vol. XXVIII, pp. 432-39.

IV. MEASURING THE EFFECTIVENESS OF PLACEMENT

The reports of placement bureaus are numerous, but for the most part they show no clear indication that the placement was preceded by systematic counseling; hence, they cannot be included here. It will be noted that those which are cited refer to the vocational guidance of handicapped persons.

MARGARET BROWN. An Experiment in Vocational Training Carried on in Cardiac Classes of the Manhattan Trade School for Girls. The *American Heart Journal*, 1927, vol. III, no. 1.

Auspices: Cardiac Vocational Guidance Service of the New York Tuberculosis and Health Association.

Subjects: 115 girls, 13 to 17 years of age, with heart disease, placed in special classes in dressmaking and millinery at the Manhattan Trade School for Girls; permitted to enroll only after medical examination and interview with counselor.

Time elapsed after guidance: Not stated.

Specific question investigated: To find out to what extent the training in these occupations, under medical supervision, is safe for children with heart disease.

Criteria: Wages; number of positions held; time lost on account of illness.

Findings: The majority of the girls who completed the course and those who remained in the class for a year or more were working at the same or related trades at the time of follow-up.

Those children with considerable training who entered related trades were earning higher wages and had remained in the same jobs longer, with shorter periods of unemployment, than those who entered occupations not related to their trade training.

The majority of the girls at work were able to carry on without losing time on account of ill health.

FEDERAL BOARD FOR VOCATIONAL EDUCATION. A Study of Rehabilitated Persons. Bulletin No. 132. Washington, D. C., 1928.

Auspices: Federal Board for Vocational Education.

Subjects: 6,391 disabled persons—5,735 males, 649 females.

Time elapsed after guidance: 2.5 to 5 years.

Specific question investigated: To determine the value of the rehabilitation work carried on by rehabilitation officials.

Criteria: Kinds of work followed since rehabilitation; wages received; promotion in employment; and regularity of employment—compared, when possible, with the condition prior to rehabilitation.

Findings: 73.4 per cent had had "reasonably continuous" employment after rehabilitation; 49 per cent had had no unemployment since rehabilitation; 39.9 per cent were still employed in the rehabilitation job at time of follow-up; 5 per cent were obliged to leave the rehabilitation job because they were physically unable to do the work; 75 per cent were placed in new jobs; 70.6 per cent were placed with new employers; 25 per cent were placed with a former employer. Average earnings were larger after rehabilitation. Rehabilitation had been accomplished in 76 per cent of the cases at a cost of less than $150 per case.

"Studies are in process which will show what proportion of the cases left their re-

habilitation jobs for better jobs, and also what proportion of them had been forced to take jobs of lower grade."

J. W. DIETZ. An Experiment with Vocationally Handicapped Workers. *Personnel Journal*, 1932, vol. X, no. 5, pp. 365–70.

Auspices: Western Electric Company, Kearney, New Jersey.

Subjects: 115 vocationally handicapped persons: 115 control subjects.

Time elapsing: 1 year.

Specific question investigated: Do physically handicapped workers, who are placed on jobs with reference to their particular handicaps, succeed as well as workers without handicaps?

Criteria: Number of absences due to illness; number of accidents; earnings; quantity and quality of output as judged by supervisors.

Findings: The handicapped group lost 7 per cent less time due to illesss than did the control group; and had 5.6 per cent fewer accidents.

The earnings of those on a weekly basis increased by 4.6 per cent as compared with an increase of 4 per cent of the control group; the earnings of those on an hourly rate increased by 8.0 per cent as compared with an increase of 9.9 per cent on the part of the control group.

"Since the cases were spread over many types of work and since many of the jobs were such that objective measurement of success was quite difficult, if not impossible; all that can be said is that the supervisor reported the 'A-VD's' in many cases to be equal to any employees in their departments."

V. MEASUREMENT OF THE EFFICACY OF FOLLOW-UP

No investigations have been found in which the aim was the measurement of the efficacy of follow-up.

MEASURING THE RESULTS FROM USE OF SCHOLARSHIPS AND LOAN FUNDS

Scholarships and loan funds play such an important part in vocational guidance that they should receive attention here. Many of the reports of organizations which distribute such grants are only in the form of annual reports, and so are not included here; in most cases, also, no indication is given that the grant was accompanied by specific vocational counseling. There is no question, however, that the important part played by scholarships in vocational guidance warrants measurement.

CONCLUSIONS

This summary shows that there has been considerable investigation looking toward the measurement of the outcomes of vocational guidance. It confirms the observation made by Smith to the effect that the third decade in the history of vocational guidance will be devoted to "examining the product of our process and to checking the results."[1] It will be observed that the thinking of investigators is following three trends. One group advocates examining an entire plan of vocational guidance in the light of its conformity to certain standards. A second type of investigator would evaluate an entire school plan in terms of the activities of pupils who have passed through the school system. By far the greatest number of investigators, however, have made intensive follow-up studies of individuals who have been definitely guided. This last is undoubtedly the most expensive method, but it surely leads to the most clear-cut results, since it confines the investigation to a limited area where the conditions are known. Even with

[1] Fred C. Smith. How Guidance Should Affect the Individual. *Vocational Guidance Magazine*, 1931, vol. IX, pp. 291–295.

the limitation to individual cases, however, the complexity of each individual's circumstances increases with the years of his vocational progress, and so many extraneous factors are involved, that it is difficult to determine which results can properly be attributed to the vocational guidance given some years previously.

One difficulty has been clearly exemplified in all these investigations; namely, that of locating persons after they have been advised. While in some investigations 80 per cent were available for follow-up, in others barely 50 per cent could be located. Results from such small samples are of questionable reliability.

These investigations also point to the wisdom of waiting until the persons guided have reached a settled vocational status. Surely boys and girls of sixteen or eighteen have not reached that point.

An ever-recurring problem is that of the criterion to be used in determining the degree to which the individual is adjusted.[2] An examination of the investigations reported in Section III (Counseling) shows a gratifying tendency to be content with nothing short of objective data. While no single criterion will probably ever be discovered, it is possible that a combination of weightings may be evolved. At any rate, it is evident that a considerable amount of attention will be devoted to this problem within the next few years.

As to the phases of vocational guidance which seem to be most neglected, they appear to be evaluation of occupational material gathered, and of follow-up.

On the whole, we may feel encouraged with these attempts to measure results in a field so complicated as that of helping individuals to find their way through the occupational maze. It is apparent that vocational counselors regard post-counseling research as one of their heaviest responsibilities, and we may look forward to continued activity in this direction.

Manuscript received February 17, 1932

[2] W. V. Bingham, and M. Freyd. *Procedures in Employment Psychology*. Chicago: Shaw, 1926. Chapter III.

Forecasting Certain College Aptitudes

By A. B. Crawford, *Yale University*

Dr. Crawford contributed this paper to a symposium on "Who Should Go to College," arranged by the Personnel Research Federation in cooperation with other personnel organizations meeting at Washington last February.

The intellectual level of undergraduates in America is considerably lower than in Europe. While this is due in good part to our democratic ideals, colleges, without sacrificing the essentials of these ideals, can considerably improve their present methods of educational selection and guidance. Standards of general educability, as measured by scholastic aptitude tests, preparatory school grades and other factors, can profitably be raised. However, minimum general standards should be sufficiently flexible to allow for outstanding special abilities which may be measured by specific aptitude tests. On the basis of the latter should be determined the type of education to be followed. A program is suggested for the development and recognition of certain procedures for measuring both general educability and the special direction in which individual's educational talents lie. Results of recent experiments along these lines at Yale are cited.

A GREAT deal has been heard in recent years of the growing universality of college education. President Neilson of Smith states that in the European colleges and universities the intellectual level of the student body is about equivalent to the top ten per cent of our own university population. He goes on to say: "Why do we have the other 90 per cent? . . . . If our colleges were made up of that top ten per cent, they would make a better showing to the world. We are educating a grade of natural ability that is left in Europe to industrial occupations, to the minor clerical work, which can be engaged in without higher training. We do it because as a nation we believe in education—it may be said, naively, and touchingly—but profoundly."

Then too, Honeywell has recently pointed out that even Jeffersonian democracy did not contemplate higher education for all. Nevertheless, in this country, students have come to accept the maxim that any young man or woman who wants to go to college has the right to do so, relatively irrespective of ability, intellectual capacity, or means of payment. As a consequence, there is not, in effect, much intelligent selection of our college population today.

Although progressively higher en-

trance standards of admission are being set up by colleges, it is important to bear in mind that their selection can only be made from among the group applying for admission. If this group reflects but little preliminary selection by society or the schools, then the amount of choice left to the colleges is not great. In other words, the make-up of the group of applicants is determined by the individual's own decision, family inclination, economic conditions, social and extra-curriculum ambitions, and many additional factors *other than that individual's real educability.* In England and to a still greater extent on the continent, selection goes on at the various elementary levels and the result is that universities, their examining boards, their scholarship and fellowship committees, are in the advantageous position of dealing with a group of applicants, almost all of whom are particularly promising. In this country, no such preliminary winnowing of collegiate material takes place. It has been recently estimated by Harl R. Douglas, that "The percentage of people of college age who are attending college today is approximately 14 per cent, or one in seven as compared to one in sixteen in 1920, one in 27 in 1910 and one in thirty-six in 1900."

On this point, Professor Toops of Ohio State reports, "The entire capacity of Ohio colleges could be filled twice over with students from the upper 60 per cent in intelligence test scores, if all of these, and no others, applied for admission; but actually so little selection takes place that the intellectual quality of the high school seniors is almost equivalent to that of the Ohio College freshmen; there being complete overlapping except for the fact that the median high school senior is about the equivalent of a 40 percentile Ohio College Association freshman." Similarly, a statewide intelligence survey recently made in Wisconsin revealed that only three-fifths of all high school seniors intending to enter college were above average on the test. Thirteen per cent of the group ranked in the lowest 20 per cent on the test. Thirty per cent of all those scoring in the lowest quarter and 38 per cent of all those in the second quarter declared their intention to enter college. Yet nearly 80 per cent of all the students dropped from the University of Wisconsin had scored below average on a similar intelligence test.

I think we are gradually beginning to realize that this situation is more responsible for the comparatively low intellectual standards which exist in our colleges, than are such oft-mentioned factors as uninspired teaching or short-comings in the curricular plan. My major premise in dealing with this topic, therefore, is that only those should go to college who have demonstrated academic promise of a relatively high order. For the great majority of cases that means, as a minimum standard, at least the upper half; and as a more desirable standard where conditions make it practicable, perhaps the upper quarter or even the upper tenth of the total school population.

But this question is not one which can be answered in any such simple terms. For one thing, we have colleges of every known degree and variety of

purpose, and before we can begin to discuss intelligently who should go to college, we should consider what kind of college we are talking about, and for what purpose the student is going. Failure to do this is one of the primary reasons for confusion on this question.

Another problem is presented by the occasional student, with exceptional talent of a high intellectual order in some special direction, but whose deficiencies in certain other subjects may pull that general average down below the minimum standard. This is not an argument in favor of lowering the standard of educability, but rather one for determining it by a more thorough sampling of an individual's powers than is necessarily provided by the usual school and entrance credit subjects.

The traditional indispensability for each and every student, of certain subjects, may at present not infrequently result in the admission of some mediocre student who conforms to the accepted educational pattern, and the exclusion of another whose specialized capacity in some direction may be unusually high, but who (perhaps for that very reason) does not conform to all of the traditional subject-matter requirements.

This phase of the problem is too involved for further consideration within the limits of this paper. I mention it merely to make clear that the standards of general educability I have in mind are not necessarily to be determined for all cases by traditional methods. The different points of view and conflicting educational philosophies of the members of different faculties introduce additional difficulties into the question of selection. The liberal arts teachers want one type of student and the engineers or scientists may visualize quite a different type as their ideal. Neither group has much appreciation of the other's criteria.

It is hardly within the province of this paper, moreover, to discuss the matter of defining the different types of colleges or the different levels of academic attainment which they represent. I am merely pointing out that these are matters which must be taken into account when the total question is considered, or when the desirability of higher education for any particular individual is being weighed. In other words, intelligent selection involves determining first the individual's educability in a general sense—that is, his all-over intellectual capacity; and second, his purposes and potentialities in any particular or special sense. Although attitude and motivation often profoundly affect the subsequent effective utilization of capacities, they are not part of our immediate concern at this point.

We may start with the assumption that those who go to college should be the ones who will profit most from higher education and from whose development and services society can in turn realize the largest return on its investment. We must seek data on *both* these aspects of an individual's potentiality—that of the *level of attainment* he is likely to reach in a broadly educational sense and also that of the *direction* in which he is likely to carry this all-around ability to its highest development—in other words his rela-

tive aptitude for one or another type of intellectual task. These two different aspects of ability appear to be best measured by somewhat different techniques. We shall, therefore, take up first the question of predicting a student's academic potentiality *in general*; and next the possibility of predicting more specifically the nature of his special aptitudes.

Now, so far as this measurement of general educability is concerned, the method of academic prediction from a weighted combination of several different pre-matriculation measures seems to be the most promising. I believe that Dean Johnston of Minnesota was the first to suggest and put into effect a simple basis of predicting freshman scholarship by combining a student's school grades with his score on a so-called "intelligence" or "academic aptitude" test. Professor Brigham of Princeton carried this plan somewhat further and developed what he called a "bogey" derived from the student's rank in his school class, his score on the Scholastic Aptitude Test, and his average on the College Board examinations. Other institutions have experimented along the same lines and there is of course nothing uncommon or mysterious about this procedure.

Briefly, our own procedure is as follows. We start with the student's school record but instead of taking the average of all his grades (whose significance varies so largely with the marking system) we ascertain his *rank in class* (such as 17 in a class of 294, or 11 in a class of 20). Then we assign him an arbitrary mark, corresponding (on a normal probability distribution) to the position he actually attained in his high or preparatory school.

But school standards, as well as their marking systems, vary and we know that any student's rank depends in part upon the competition, or average performance of the whole group, among whom the rank was attained. We have, from test records and other data, evidence as to the general level of ability characteristic of most of the schools and localities with which we are dealing; and in addition, we have, for several years past, made careful comparisons between the school and subsequent college records of all undergraduates. Consequently we are in a position to correct the initially assigned arbitrary grade, in the light of our experience as to the probable achievement it signifies. We have instances to show that third quarter ranking in a few schools may correspond, so far as actual achievement goes, with first quarter ranking in certain others. But by determining the median range characteristic of different school groups we equate for these variations, and thus obtain, for each admission applicant, an adjusted school grade which takes account both of *his own rank* in school and of the *rank of that school* among the others. This adjusted school grade correlates about .60 with Freshman Year averages at Yale. We do somewhat the same thing for entrance examination grades—that is, we adjust them also in accordance with the characteristic variations previously observed between the examination grades and freshman records of students from different schools.

Other factors entering into our

prediction are Scholastic and Mathematical Aptitude Test scores and age (which, for Plan A applicants correlates —.35 with freshman grades). By multiple correlations we determine the statistically best-weighted combination of all these factors and compute our individual predictions accordingly. These predictions, if they are to be of use to the Board of Admissions, must incidentally be calculated in short order. Having first determined our formulae, we set up each individual's data on cards as received. Certain components are available earlier than others and we naturally deal with them first. College board grades come last, and we are by that time ready to complete each applicant's prediction by multiplying his Board average by the proper factor and adding up his total. Thus last year we reported some 1200 predictions to the Board of Admissions within 48 hours of the receipt of our final data. The predictions thus obtained correlate a little better than .70 with freshman grades. Corrected for attenuation induced by variability in the criterion alone, this correlation would rise to about .80.

A prediction derived by analogous means at the University of Wisconsin correlated .65 for one class and .71 for another, with freshman grades. Of 147 individuals for whom failure was predicted, 123 did fail in freshman year, 18 subsequently withdrew or dropped behind and only 6 did uniformly successful work.

Of course, no such method is perfect—individual incentives, new subjects of study, the effect of other interests, illness, self-support, activities, the influence of teachers or counsellors, and many other factors introduce numerous variations in individual performance. But the prediction is valid for a surprisingly large percentage of cases. Two-thirds of our freshmen at Yale, in three successive classes, have averaged (on a scale of 100) within five points of our expectations. Most important, too, is the fact that this correspondence holds good all up and down the line—that is for prediction not only of a student's chances of success or failure, but also of *how well* he will probably do. It gives the best clue we have to potential honors men and differentiates pretty well between the superior, average and inferior groups. It takes into account several factors, such as the motivation of the individual as revealed by his school record, his actual achievement in subject matter (whether tested by one or another form of examination) and his educational alertness as measured by an academic aptitude or intelligence test.

A weakness in the prediction technique at present is occasioned by what I referred to earlier—that our students for the most part are measured by their accomplishments in certain specified and traditional subjects. Among these, verbal subjects (English, History and social studies, ancient and modern languages) bulk large. These traditional subjects sample the educability of the majority of the students rather satisfactorily. Some who may be weak in certain of these subjects and very strong in others do not, however, get a chance to show their real educability because the school curriculum does not give these talents sufficient, if any scope. For them, the general

prediction may accordingly be in error, since it is after all based to a considerable degree upon their actual past achievements. We need particularly to guard against overlooking unusual ability in some fields such as science, an ability which a student may have had but little opportunity to demonstrate in school and which, therefore, has not sufficiently influenced his school record or general prediction.

Now if we consider in more detail this question of measuring specific educational aptitudes—that is, the potential educability of the individual, not in general but in respect to one or another definite field of study—we find some rather interesting recent developments. Of course, this whole question of attempting to guage the individual's *special* aptitudes (rather than his general educability or all-around intelligence) is relatively new, and conclusions reached thus far can hardly be stated with assurance. There does, however, seem to be reasonable evidence for the existence of several different kinds of ability, irrespective of its *level*. The work of Brigham for the Scholastic Aptitude Test Commission of the College Entrance Examination Board has resulted in the development of two tests now being used by that body. For their value in the counselling of students I can vouch from experience, although the latter is to be sure, rather limited.

One of these tests contains a residue from the original Scholastic Aptitude Test and is composed very largely of verbal material—problems of reasoning, of analogy and the like, involving the use of words and testing both the student's vocabulary and his power to use it intelligently. Naturally the predictive value of this particular test is highest for such freshman subjects as English and History which depend very largely upon the use of words.

The mate to this verbal test is a Mathematical Aptitude Test, which eliminates verbal thinking as far as possible. It tests mental processes by the use of mathematical symbols rather than by words. This is not an achievement or subject matter test in Mathematics, and the person who has the mathematical type of mind can conceivably make an excellent score on this test even though he has not actually studied the subject.

We have attempted with these aptitude tests to develop a *differential prediction*. Unlike the general prediction discussed earlier, this deals not with the student's most probable scholastic average in *all* subjects, but with his educational potentialities in a certain direction. For statistical and other reasons it is harder to obtain this special prediction than a general one; but, if obtainable, the special prediction is in many ways the more useful measure. By combining school grades with the verbal aptitude test we have obtained one such differential prediction (History-English) correlating .55 with grades in those two subjects; and by using the Mathematical instead of the Verbal Aptitude Test, we have obtained another (Math-Science) which correlates .66 with the latter grades. Although these correlations are nothing to become excited about, they indicate a strong probability of our being able to offer useful advice to students undecided as between an academic and a scientific field of concentration. They

also suggest whether a student, weak in some one subject—such as Mathematics or English—has sufficiently outstanding possibilities in another field to justify waiving the one entrance deficiency for the sake of an unusual and compensating talent in another direction.

One more special aptitude to be considered lies in the field of spatial relations—that is, in the ability to visualize and manipulate intelligently three-dimensional mental concepts. This is naturally important in the fields of design, art, architecture, and others which require much visualizing; and equally so for mechanical and other types of engineering. Mechanical drawing, for example, has been called the language of engineering. It is essential for the student in this field to be able to imagine a thing in three dimensions, and make two-dimensional drawings of it in such a way that some other person with that (to me) strange and entirely mysterious ability to read blue-prints, can understand his idea and actually know how the gadget works. Descriptive geometry is, of course, in the same category.

Much of the most important research and inventive work in these fields requires the ability to use visual concepts with a high degree of intelligence and to apply this to extremely difficult problems which cannot be solved by the use of words, or even mathematical symbols, alone. The ability and intellectual power of certain individuals may in a general sense be equal; yet their mental processes may run, in these respects, along quite different lines. The verbalist may be entirely unable to follow the ideas of the mathematician or the engineer, not because he hasn't an equally able brain, but because he does not use it in the same way.

A spatial relations test with which we are now experimenting correlates better than .60 with Mechanical Drawing grades. By combining Mathematical and Spatial Aptitude Test scores, we hope to develop a special prediction for engineering studies. Preliminary evidence suggests that this measure will correlate better than .70 with the subjects most significant for success in the engineering departments.

Another form of educational talent is probably to be found in the language field. Some people seem to have superior linguistic talent; others of equal general educational ability for some reason find it almost impossible to express themselves intelligently in any foreign language.

Still more specialized types of educational aptitude tests have been developed along other lines. Much is claimed for the new Medical Aptitude Test, now being used by almost all of the medical schools in the American Association as at least one factor in the selection of their applicants for admission. Several attempts have been made to develop a legal aptitude test and for two years our office has been working on this problem in behalf of the Yale School of Law. Although we cannot yet tell whether our experiments in this direction will stand the test of time, evidence suggests that we are on the right track.

This latter test was developed, with the assistance of the Law School Faculty, to measure certain types of ability which seem especially important

for success in legal studies—such as precision in the use of words, analytical ability, perception of analogies, and judgment in the application of general principles to specific instances. The Legal Aptitude Examination was first given in November, 1930, to the class which had just entered the Law School. It yielded a correlation of .64 with the subsequent first-year grades of these same students. Moreover, all but two of the 26 highest ranking men in the Class, (Upper quarter) scored above average on the Legal Aptitude Test, (and those two were just average). Furthermore, all but one of the men ineligible to return to the Law School this year, because of an unsatisfactory first-year average, were in the *lowest quarter* of Legal Aptitude scores. We are now experimenting with a combination of these test scores with undergraduate college grades. For ninety-nine cases in the First Year (1933) Class, for whom data permitted this calculation, the correlation with actual first-year law grades was .78.

These then are illustrations of attempts to predict educational aptitude in some particular direction, as well as educability in general. Together they give us a clue as to which students we want, and in what studies they may best concentrate. In our emphasis on tests, measurements, and prediction, however, we must not overlook the tremendous influence of motivation. Interpretation of all prediction data should be made flexibly, sensibly, and with due attention to other factors of influence.

One of the most complicated problems in this connection is presented by the self-supporting student. On the one hand, we know that a student earning a substantial part of his way at college is carrying a double burden. On the other hand, we know that he is probably going to put forth more than average effort—because he would not be attempting this double burden at all if he were not really interested in going to college and anxious to get the most he could out of it. We can allow a certain leeway here for his probably excellent motivation and determined efforts; but there is a critical point (with us approximately the top of the lowest quarter) where even this extreme effort cannot overcome the handicaps of low general academic ability and heavy drain on time and effort, through outside employment. I emphasize this, because it seems to me that many of the most tragic cases of academic failure fall in this category; and the effort and earnestness of the individuals concerned is just what makes the cases so tragic.

May we then reach any conclusions on this question of who should go to college? I think we need to learn a great deal more than we now know, before we can attempt to answer so complicated a series of questions with any assurance. We might, however, somewhat clarify the situation by some such program as the following: 1) encourage better definition of college courses, qualifications for academic success therein, and the aims of different curricula and different institutions; 2) emphasize to society the necessity of better selection for higher education; and the fact that it will obtain the greatest return on its educational investment from those of greatest potentiality; 3) encourage the determina-

tion of educability in a general sense, through some method of prediction, and the acceptance by society and the schools of this as a valid and useful procedure; 4) recognize nevertheless that genuine intellectual ability of any special nature may prove more important than universal attainment in all of several traditional, predetermined units; 5) encourage and enlarge the movement towards aptitude testing and the attempt to discover for every individual what special educational talent he has or in what particular direction his education is likely to reach its highest development.

With these objectives, we should strive to win general recognition for higher all-around standards for college education. Thus we might obtain a better initial winnowing of candidates for admission, than we have at present. In doing this, appropriate consideration should be given to outstanding special ability. Then, of those who do meet this reasonable and flexible minimum standard of general educability (which of course may well vary for different institutions as it does today) we should try to determine the type of education (in aim as well as in subject matter) best fitted for each individual.

Especially should we not be content just to admit anyone who can qualify and then expect him to find, by hit or miss methods, something which may interest him and capitalize his resources. Scarcely any institution is equipped to give full scope to *every* individual's possibilities. It ought however, to try and ascertain what these are. Naturally the majority of students do not possess really exceptional ability or particular aptitude. Those who do are by definition abnormal, that is, superior to or different in some significant way, from the common run. Potentially, at least, they have the possibilities of genius. To try and identify those people who are thus distinctly superior in some particular capacity seems to me one of our most important educational obligations. Indeed we should not only inquire what the student may offer the college, but also what facilities it in turn can offer him, if he does evidence some special talent. Not to discourage anyone who in all likelihood cannot meet its academic standards, and who therefore seems to be courting probable failure, is evasion of its responsibility.

On the other hand, to enroll in the wrong type of course another student with unusual aptitude for some field (perhaps because his real bent is not embraced by its curriculum) is encouraging him under false pretenses. Therefore, one important aim of every higher institution should be flexible, directive selection of every student, with due regard for both his general and his special abilities.

Manuscript received February 19, 1932

Maryland Cross Classification Plan

By Oliver C. Short, *State Employment Commissioner of Maryland*

It is hoped that Maryland's efforts to set up a comprehensive, state-wide personnel classification plan will serve as an example to many other communities.

The preparation of job specifications and classification plans which include all positions in industrial and commercial establishments and in the public service of an entire community has until recently been an ideal rather than a conception of practical application. In the State of Maryland work is now under way on such a plan which, when completed, will form a composite picture of all classes of employment in the State. All positions, irrespective of their location, which are sufficiently alike in duties and which require similar qualifications of their incumbents are grouped together under common titles descriptive of the duties performed. Class specifications are drawn up which comprehend the several specific duties common to the various classes of positions.

The primary objectives for making the survey and preparing the community wide classification plan are: to furnish the educational authorities with data upon which they may formulate or reformulate educational programs to meet more closely local requirements; to furnish the vocational guidance department with correct information as to employment statistics, job specifications, and employment possibilities; to point out promotional opportunities to those already employed; to furnish placement agencies with information from which they will be able to do qualitative placement and thereby aid employers in securing workers whose pre-employment qualifications have been measured against job specifications; to improve personnel practices in the various organizations covered by the survey.

A COMPLETE personnel program, if scientifically handled, must be based upon a carefully prepared and currently maintained duties classification system whereby all positions are grouped into classes and sub-divided into grades according to duties or work elements, responsibilities, and qualification requirements involved. Cross departmental job studies have been made and job specifications and classification plans developed chiefly in units of government where the personnel administration is centrally controlled. Where these plans have been accurately prepared and currently maintained, the personnel administrator finds in them the most important and most effective working tool for correct personnel administration. Uniform titles which indicate the type and grade of the position are applied to all positions in the public service, without regard to departmental lines, in which the duties and responsibilities are alike or

similar and which require like or similar qualifications.

Common personnel terminology and clear-cut definitions of duties are established which make clear to the recruiting agencies, the department heads, the budget authorities, and legislative bodies the relative importance of the various positions of employment in the service as a whole. Lines of promotion are defined and a basis is set up for pre-employment testing and for lay-off, retirement, demotion, transfer, and leaves of absence, and an equable basis for salary adjustment is furnished. Recruiting and the many and varied other personnel problems are as unscientifically and blindly handled in the absence of a duties classification plan as would be the construction and furnishing of a building without plans and specifications.

Job studies have been made and job specifications prepared in many individual industrial and commercial establishments. When properly prepared and applied, they have been uniformly satisfactory. Inasmuch as the places of employment in an entire community are embraced in individual industrial and commercial units and in the units of government, a cross industrial and commercial classification plan should prove as valuable a tool in the community wide personnel program as in the program of an individual organization.

The preparation of job specifications and classification plans which include all positions in industrial and commercial establishments, and in the public service of an entire community, has until recently been an ideal rather than a conception of practical application. Studies of this nature and magnitude are attracting the attention of a number of organizations and individuals interested in employment and in the wider aspects of personnel administration; it is believed that within the near future a number of job studies embracing all positions in the private and public service of an entire community will be completed and cross industrial and commercial duties classification plans prepared.

In the State of Maryland work is now under way on such a plan covering at first all positions of various types of employment in the metropolitan area of Baltimore and later to be extended to the entire state. Classification plans already exist for the civil service of the State and of the City of Baltimore. When a similar job has been completed for the industrial and commercial establishments and consolidated with or linked into the systems of the public service, a composite picture of all classes of employment in the State will have been completed.

It has been found in cross departmental surveys made in units of government that there are positions sufficiently alike in duties and qualification requirements to be grouped together under common titles descriptive of the duties performed. Class specifications can be drawn up comprehending the several specific duties which are common to the various classes of positions, and statements of requisite qualification requirements of persons to fill the positions can be standardized. Where such studies have been made in individual industrial concerns the same situation has

been found to exist, and groups of positions of like nature can be made in order to facilitate the handling of numerous personnel problems.

Because the employing community is made up of the individual units of industrial and commercial concerns and the units of government, the Maryland survey is based upon the principle that a cross industrial and commercial survey will reveal the same irregularity of personnel control as such surveys have revealed in units of government and in the individual business enterprises. There will be found places of employment in the various organizations which will admit of the same type of treatment from the personnel standpoint as exist in organizations where such studies have been made.

There is no fundamental difference among the personnel problems existing in the various places of employment. There is no logical business reason that different titles should be used in different concerns, public or private, for positions which are alike in duties and qualification requirements; nor is it logical that different plans for promotion, demotion, leaves of absence, hours of work, and separations should exist in one concern of a community than exist in another. Salary rates and ranges should be essentially alike for similar classes of work.

The organization responsible for initiating the idea of such a survey and resulting classification plan was the Personnel Managers' Association of Baltimore which in 1925 outlined and endorsed a comprehensive plan and submitted it to the Baltimore Association of Commerce for consideration. It was recognized that such a survey would involve the expenditure of a sum of money which was beyond the financial bounds of the Personnel Managers' Association. The plan was not endorsed by the Association of Commerce when first presented, and due to changes in both organizations it was temporarily abandoned.

In 1928 the Committee on Technical Education of the Engineers Club of Baltimore interested itself in the course of education then being offered or proposed to be offered in the Baltimore Polytechnic Institute which was being rebuilt and greatly extended in capacity. The primary consideration of this committee was centered around the question of whether or not the Polytechnic Institute was adequately training its graduates to meet the requirements of technical employment in the metropolitan area of Baltimore. The State Employment Commissioner of Maryland, who has had considerable experience in preparing classification plans for units of government and is in executive charge of the civil service of the State of Maryland, was called into consultation in connection with the proper method of answering the question with which the Committee of the Engineers Club was confronted.

After a series of meetings it was decided that the only practical method of answering this and many related questions was to make a survey of places of employment in the technical fields of Baltimore. At about this juncture a special committee of the Baltimore Association of Commerce was appointed to coöperate with the Engineers Club. It was agreed that the survey was the only practical

method of discovering the essential facts and that, while the primary objective would be to discover the requirements in the technical fields, the survey should include all places of employment and finally embrace not only the industrial and commercial enterprises and the public service for the metropolitan area of Baltimore, but should be extended to other communities of the State. In this project the City departments of education of the State and the State Department of Education became interested and the Legislature of 1931 was requested to provide an appropriation in the Vocational Education Division of the State Department of Education to carry forward the survey.

The State Employment Commissioner was given direction of the survey and the establishment of classification plans. The questionnaire, which has proven successful in securing the desired information in units of government throughout this country, was adopted as the proper method for collecting the information in this survey. Representatives of the Personnel Classification Board of Washington were called in to assist in drafting the questionnaire and in inaugurating the work. The questionnaire elicited information of the following nature: description of the work done in the type of position occupied, pay rates, hours of work, educational requirements, experience requirements, physical condition, and number of persons employed in the particular type of work.

A number of field men were selected to contact the industrial and commercial concerns, to secure their cooperation, and to collect the information requested upon the questionnaire. The questionnaires from the different concerns, when completed, were assembled at a central office and classifiers sorted them according to well defined services, grouped them according to classes of positions, and divided the classes into grades. Standard titles have been assigned to the various grades of positions and specifications will be written for each grade of position irrespective of the organization in which the position exists. The final classification plan will be made available to the industrial and commercial concerns and to such other agencies and individuals desiring to make use of it. Tabulations have been made and submitted to the departments of education showing entrance salaries, maximum salaries, necessary education, desirable education, and number of persons employed.

The following are among the objectives for making the survey and preparing the community-wide classification plan: first, to furnish the educational authorities with data regarding the places of employment, the duties of the positions and the qualifications required in order that the educational program may be formulated or reformulated to meet more nearly the local requirements; second, to furnish the vocational guidance department with correct information as to employment statistics, job specifications, and employment possibilities; third, to point out the promotional opportunities to those already employed; fourth, to furnish placement agencies with information from which they will be able to do qualitative placement

and thereby aid employers in securing workers whose pre-employment qualifications have been measured against job specifications; and fifth, to improve personnel practices in the various organizations covered by the survey.

There is no doubt but that many valuable bi-products will result from a survey of this kind, but it is believed that the attainment of the primary objectives will be adequate proof of its worth.

A classification plan once prepared and adopted is a static instrument applied to a highly dynamic force of workers. Manifestly, therefore, it will be necessary to keep the classification plan current with the inevitable changes in employment. The agencies that will doubtless make the greatest and most valuable use of such a plan are those whose primary function it is to serve employers with qualified employees. Such a classification plan should be made part of, and the chief working tool of, a well organized community free-employment service.

Manuscript received April 12, 1932

Scoring Weighted Item Tests

A Short-cut Method

By Ross Stagner, *University of Wisconsin*

Anyone facing the large amount of clerical work necessary in scoring a considerable number of blanks of a test having multiple item-weights will welcome Dr. Stagner's short-cut method. It is simple and effective.

A method is described whereby multiple-weighted tests can be scored with a considerable saving of time and probable increase in accuracy as compared with the use of stencils. This method consists essentially of the following steps: (1) eliminating negative weights by adding a constant to all weights; (2) arranging these weights on a mimeographed sheet in such fashion that all the weights corresponding to the answer marked by the subject can be underscored by a single stroke of a pencil; (3) adding the underscored figures column by column to give the total score. The result differs from the score obtained from positive and negative weights by a fixed amount, and this amount can be subtracted from the total score, or norm tables can be easily adjusted to the new score values by adding this fixed quantity to each raw score value given in the table of norms. The method requires no equipment other than mimeograph and adding machines.

THERE are at present a number of tests on the market which used a weighted scoring scheme. Among these we can mention as especially well-known the Strong Vocational Interest Blank. The Bernreuter Personality Inventory is also becoming widely used. While we admit the correctness of the arguments presented by Strong and Green[1] in favor of the weighted scores, we have on several occasions been confronted with the practical problem of getting these scores accurately with a small expenditure for clerical assistance. We have therefore devised a scheme which will be of considerable utility to those who have no special mechanical equipment such as the Hollerith machine.[2]

The problem arose in connection with the scoring of several hundred Bernreuter inventories. In this test there are 125 items, each answerable in three ways. Each of the three answers has four scale values, being used as diagnostic of four different personality

[1] E. K. Strong and Helen J. Green. Short-cuts to scoring an interest test. *Journal of Applied Psychology*, 1932, **16**, pp. 1–8.

[2] For those who have such equipment there is a somewhat better method described by P. J. Rulon and W. Arden. A scoring technique: for tests having multiple item weightings. *Personnel Journal*, 1930, **9**, pp. 235–41.

traits. The scoring method recommended by the publishers involved the use of slot-cut stencils on which the weights, ranging from − 7 to +7, were printed for each one of the four scales. To get the four scores meant applying four different stencils to the test. The process of counting, it was suggested, might be done either by totaling the numbers mentally or tapping them out on a Veeder counter. It is obvious that either of these methods involves considerable time and that, at the end, no check on the accuracy of the process is available.

The following method of scoring was therefore worked out: since the lowest scale weight was −7, seven was added to each of the item weights. This eliminated negative signs, which, as everyone knows, are one of the greatest sources of error in arithmetic. The range of scale weights now was from 0 to 14. The four scale values for a particular answer were then placed together. This made it possible for a single stroke of a pencil to indicate that these four numbers were to be added in the appropriate columns. The simplification brought about by this arrangement may be shown by the following consideration: by the stencil method, we should have:

B 1-N			B 2-S		
Yes	No	?	Yes	No	?
−5	5	1	6	−5	−2

B 3-I			B 4-D		
Yes	No	?	Yes	No	?
−7	7	0	4	−4	2

whereas by the new method we have a single mimeographed sheet on which the figures are arranged thus:

Yes				No			
N	S	I	D	N	S	I	D
2	13	0	11	12	2	14	3

?

N	S	I	D
8	5	7	9

Then, by the stencil method, we should have to score each test four times, each time using positive and negative numbers, with their invitation to err, and at the end having no idea as to the accuracy of our results. By the new method, we take the mimeographed sheet on which these scale values, all positive, are arranged as shown, and mark the sets of values corresponding to the subject's answers. Thus, in the above example, if the subject answered "no," the numbers 12, 2, 14, 3 would be underscored by a single stroke of the pencil. Going through the entire sheet of 125 items can be done in less than five minutes. It is then possible to take an adding machine and go straight down the N column, taking Yes, No, ? in succession, and obtained a total N score. The adding machine gives an objective record of items added in, or, if such precaution is considered unnecessary, a faster non-recording machine may be used with an item counter. This assures adding in all 125 items, which is more assurance than was available on the stencil system. In addition, the marked sheet remains for anyone to check at any time.

The outstanding points of the new scoring system, then, are as follows: (1) negative weights are eliminated by adding seven (or the lowest item weight) to all weights. (2) These weights are mimeographed on a sheet

in such an arrangement that all the weights corresponding to a given answer can be underscored with one stroke of a pencil. (3) These can then be added on an ordinary adding machine, on which it is no more difficult to punch 8 than 1. (4) An objective record can be made of the actual items added, or an item count can be obtained as a partial check on accuracy. (We have found that by far the most common error is omission of single items, hence the item count catches practically all mistakes.) (5) The scoring sheet remains to be rechecked at any time.

The author finds an average saving of about fifty per cent in clerical time using this new device. In a project such as the one being done, in which several hundred test blanks were to be scored, this represents a considerable economy.

The total score obtained by this method is, of course, 875 points higher than that obtained by the other method. (125 items, each weighted 7 heavier than before.) The use of norms for the test can be adapted to these new scores by adding 875 to each score given in the table of norms, or the total score can be reduced to the original scale by subtracting 875. The former method is desirable if very many tests are to be interpreted.

This method would be even more desirable in the case of wide ranges in weights, as in the Strong test, in which weights range from -30 to $+30$. On the other hand, it would be economical only in case a number of tests were to be scored for only a few professions. This, it happens, is precisely the use made of the test in many investigations.

Manuscript received March 19, 1932

A Selection Test for Electrical Troublemen

By Carroll Leonard Shartle, *Ohio State University*[1]

This valid and reliable battery of tests for selecting electrical troublemen was prepared while the author was on the psychological staff of the Milwaukee Electric Railway and Light Company.

The job of electrical troublemen in the Milwaukee Electric Railway and Light Company was studied in view of developing a more satisfactory method of selecting men for this hazardous occupation. Since applicants must have previous electrical experience, it was necessary to devise trade as well as aptitude tests. A battery of eight tests was checked against foremen's ratings and accident records with a result that six were retained in a final set-up for employment purposes. The final battery yielded a validity coefficient of .67 with foremen ratings. Retest after a year and a half correlated .91 with original scores.

THE occupation of troubleman or "trouble shooter" is considered one of the most hazardous in the electric distribution industry. The men are required to make quick and temporary repairs on any break that may occur in the power or lighting transmission circuits in the metropolitan area of the city. The work ranges from replacing simple house fuses to working on hot lines of 4,800 volts and over. The troubleman drives a truck which contains his equipment and he is required to rush to any part of the city where there is need of repairs on the lighting or power service. He also does some sub-station switching in an effort to restore or maintain service.

As far as the writer knows, no aptitude tests have been standardized for troublemen before. A related occupation, that of sub-station operator, has been studied and satisfactory results have been obtained. Viteles[2] and Shellow,[3] working independently on this occupation, developed batteries of tests quite similar which were shown to have rather high selective value. A part of the job of troubleman is identical with that of the sub-station operator, but the overlapping is not sufficient for one to use the same battery of tests for both occupations. However, the work done on sub-station operators was used as a point of departure for making the troubleman study.

[1] The author is indebted to Dr. Sadie Myers Shellow of the Milwaukee Electric Railway & Light Company, under whose direction the study was made.

[2] M. S. Viteles. The Human Factor in Sub-station Operation. *Personnel Journal*, 1929, 8, 81–113.

[3] S. M. Shellow. Tests for Station Operators. *J. Person. Res.*, 1928, 7, 396–398.

JOB STUDY

A detailed job analysis was made, using both the direct and indirect methods. The direct method included observing the men at work and sometimes actually doing the job itself. The indirect method included interviewing the foremen and time study men and studying their reports. An observer spent seven days with the men on the job at various shifts so as to get an idea of each of the many operations that are required in this kind of work. In general the troubleman's duties were found to be of four kinds: (1) repairing underground lines, (2) repairing overhead lines, (3) substation switching, and (4) repairing on customer's premises.

An analysis of the accidents occuring to troublemen over a period of years was also studied in order to determine what defects in ability or personality contributed toward accidents.

The occupation is of such a nature that applicants must have a general knowledge of practical electricity either from training or experience, in addition to aptitude for learning the job. To train men without electrical knowledge would be too expensive.

TRIAL BATTERY OF TESTS

From the job study it was evident that two kinds of tests were needed—first, a group of aptitude tests which would bring out native ability and show the relative capacity of the subject to perform his duties, and second, a group of trade tests which would measure the subject's knowledge of technical facts related to his job, since all new troublemen who are employed must have had previous experience in electrical and especially distribution work. A trial battery of eight tests was set up.

TESTS FOR SPECIAL ABILITIES

Pursuit test. (After MacQuarrie.[4]) This test was chosen because it evidently tests ability to follow accurately interwinding lines. This capacity seemed to play a part in the work of a troubleman in that he is required to trace circuits and diagrams and must also straighten out complicated tangles of wire.

MacQuarrie used this test as a part of his battery for measuring mechanical ability. It would seem that this type of test would be less dependent on experience than an assembly test where the subject is required to put together certain articles that he may or may not have seen before. The writer supplemented the test with written directions, the understanding of which was verified before the subject was allowed to begin work.

Blocks Test. (After MacQuarrie.) This type of test requires visualization of unseen parts. From an outside view one must visualize and estimate the number of blocks, although he gets only one view of them. A troubleman on the job is always required, after surveying the visible factors, to estimate the conditions of unseen parts. Both the blocks test and the pursuit test have been used successfully in the selection of employees for sub-station operating jobs by Viteles and Shellow. Written directions were also supplied here, as Shellow had

[4] T. W. MacQuarrie. A Mechanical Ability Test. *J. Person. Res.*, 1927, 5, 329-337.

used this arrangement with sub-station operators and found it easier to administer than the original directions supplied by MacQuarrie.

Series Completion test. The series completion test is usually considered a measure of abstract intelligence. This capacity is certainly a factor in troubleman jobs.

Arithmetic test. This test, like the series completion, was included because arithmetic tests correlate well with intelligence and also a troubleman is required to do some arithmetic on the job in calculating his time slips. This and the series completion test were quite different from the other members of the battery and it was of experimental interest to see if they would show a relationship to the criteria.

Directions test. A troubleman spends a good deal of his time driving through the city from one job to the next. This test requires a subject to visualize the directions north, east, south, and west, and to be able to keep them straight throughout a series of trips described in the paragraphs. It was thought that persons who are easily confused in finding their way about, likewise would have difficulty with the test.

Drivers' test. This is the standard test used for bus operators. It tests the aptitude of a person for operating a motor vehicle. Reaction time, distractibility, emotional control, and judgment of speed and distance are some of the important factors. The test is not included in this study, because it is already well standardized and has been given to troublemen applicants for the last year and a half.

TRADE TESTS

Circuit test. This test was designed to measure ability to follow circuits and also to provide an estimate of caution. A person who attempts the test in a superficial manner will very easily connect short circuits which under job conditions would be dangerous. These problems require a general electrical background. The subject, after reading the directions, studies the wiring diagram (see figure 1) and answers the questions by filling in the correct numerals in the blanks after the letters. Extreme thoroughness is required and practically all the mistakes made by the subjects were caused by lack of caution rather than lack of knowledge. This information was obtained by asking questions about the answers after the subject had completed the test.

Information test I. This test was made up of twenty-five statements which were answered by the subject as true or false. The questions deal mostly with ordinary facts concerning the action of electricity and its application to house lighting and distribution. Like the circuit test, general experience with practical electricity is needed to pass the test. In this case caution or thoroughness are not important factors. It does not require application of information as is found in the circuit test.

Information test II. This measures knowledge concerning an ordinary electric bell, ordinary direct current motor, alternating current motor, and outdoor sub-station. The questions are not particularly technical, but cannot be answered without a fair knowledge of practical electricity. It was assumed

that a subject who has had some experience in electrical work should be able to point out the names of the parts of ordinary electrical equipment.

Each man in the trouble department was given the battery of eight tests. The tests were given individually in the psychological laboratory of the company. The pursuit, the blocks, the series completion, and the arithmetic tests were limited as to time. three groups: A, the best group; B, the middle group; and C, the poor group. Then the men were rated within each of these groups, thus giving a continuous ranking from the best one in the A group to the poorest in the C group. Each subject's name was printed on a small card and the raters needed only to sort the cards in order to record their judgments. With so small a number of cases, this simple

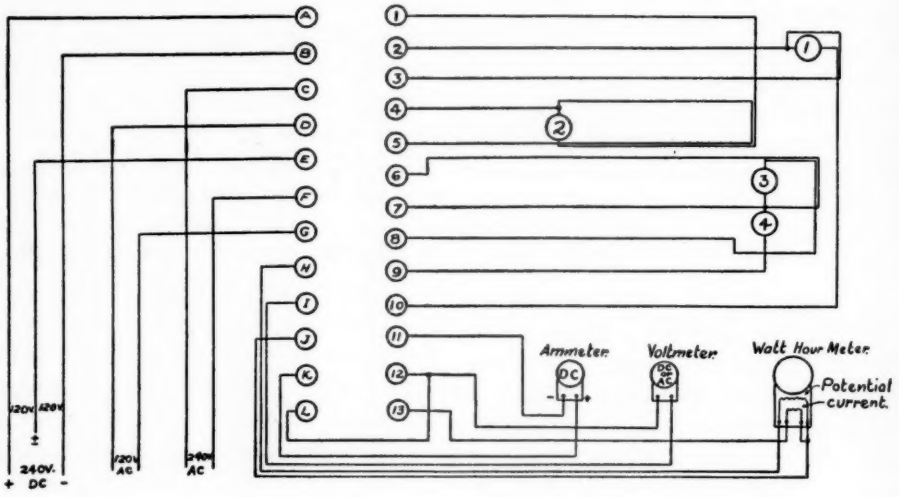

FIG. 1. CIRCUIT TEST WIRING DIAGRAM

Connections are made from lettered posts to numbered posts involving various types of current, lamps, ammeter, voltmeter and watt hour meter. Careful tracing of circuits is required to avoid shorts or other wrong connections.

No time limit was set for the directions, the circuit, and the information tests. Tests were not administered until the subject was entirely willing to coöperate and felt quite at ease.

CRITERIA OF ABILITY

To check the validity of the tests, the foreman and the assistant foreman were asked to rate their troublemen. The raters classified the workers into

method is probably more effective than a statistical rating scale.

Rater A could rank only 23 of the 27 men. Rater B rated the entire group of 27 subjects. In correlating the ratings of A and B, the coefficient was $+.87$, P.E. $= \pm.03$. This shows a fairly close agreement. The ratings of B were held more reliable than those of A, because B had direct and constant contact with the men while A's knowl-

edge of the subjects was more indirect.

Upon inspecting the groups A, B, and C, it was noticed that the raters placed approximately half of the men in the middle group and a quarter in each of the other classes. This desirable distribution is rather in favor of the reliability of the judgments.

The rankings of each rater were converted into linear units using Hull's[5] method. The two judgments were then combined into one criterion by averaging the two linear scores for each case.

As a further criterion, each man's accident record was investigated and the men were classified as to whether or not they had had accidents during the preceding year.

VALIDITY

Due to the small number of cases, it was thought better to use a simple procedure for evaluating the tests rather than to work out a regression equation. The mean scores made on the tests were computed for the A, B, and C groups of each rater In all cases, except that of the Information test I, under rater B, the mean scores for those in the A (best group) were better than those of the B group, and those in the B group were better than those in the C group. This tendency suggests that each test in the battery has validity.

The directions test was eliminated from the battery because more than half of the men made perfect scores. The series completion test was also eliminated because it was comparatively difficult to administer and one test involving mathematical reasoning was thought sufficient for the battery.

The remaining six tests were combined into a final battery. Each test was given about the same weight. The number right was taken for each test except that, on Information I, the number of wrongs was subtracted, and in the arithmetic the number right was multiplied by two, due to the fact that the quartile deviation of this test was about half that of the other tests.

A total score was then found for each subject and these were correlated with the ratings of the foremen. The following coefficients were found (Pearson r):

Total test scores and judgments of rater A, $r = +.64$, P.E. $= \pm.08$

Total test scores and judgments of rater B, $r = +.72$, P.E. $= \pm.06$

Total test scores and combined judgments of raters A and B, $r = +.67$, P.E. $= \pm.08$

Scatter diagrams were made in order to study further the relationship of the test scores to the criteria. A critical or passing score of 76 was determined by studying these diagrams. On this basis 100 per cent of the A subjects, and 84.5 per cent of the B group passed; while only 25 per cent of foreman A's C group and none of foreman B's lowest group were above the critical score. See figures 2 and 3. These results indicated that the battery of tests was capable of retaining men rated high and of weeding out those rated low.

In regard to the mean scores made by the groups of each rater, the differences were in favor of the validity of

[5] Hull, C. L. Aptitude Testing. Yonkers-on-Hudson: World Book, 1928. See p. 491.

the tests. Subjects rated poor fell considerably below the others, while there was not so much difference between the A and B groups. The means and ranges are given in table 1.

In regard to accidents, it was found that the mean score of those who had accidents during the preceding twelve months was 84.9, and the mean score of those who did not was 96.5. Of those who had accidents 66.6 per cent passed the test, while 80 per cent of those who had no accidents passed. This evidence, although not particularly strong, does further suggest the validity of the test.

DISTRIBUTION OF TOTAL SCORES

A distribution curve was drawn for the total scores on the battery, and the number of high scores was proportionately larger than the number of low scores. This might suggest that the battery was not difficult enough. However, it must be remembered that the tests were given to a select group of subjects. These men were all successful at their occupation, otherwise

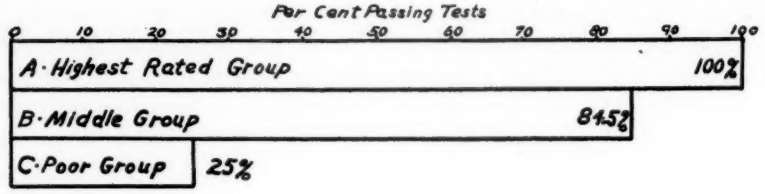

FIG. 2. PER CENT OF TROUBLEMEN IN EACH RATED GROUP WHO PASSED THE TESTS—RATER A

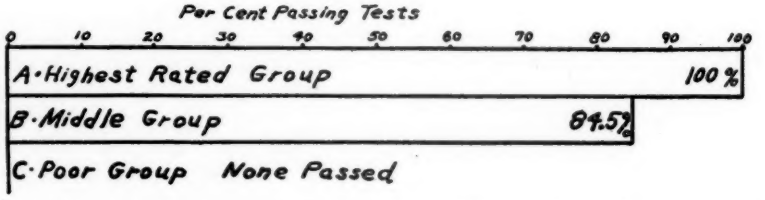

FIG. 3. PER CENT OF TROUBLEMEN IN EACH RATED GROUP WHO PASSED THE TESTS—RATER B

TABLE 1

Scores on the battery of six tests for the three ability groups

	A (BEST)		B (MEDIUM)		C (POOR)	
	Mean	Range	Mean	Range	Mean	Range
Rater A	105.00	86–119	92.84	61–118	64.75	50–90
Rater B	106.44	86–119	91.07	68–108	61.80	50–75

they would not have been retained in service. Had the tests been given to all men who ever entered the occupation, the distribution of scores probably would have been more normal.

RELIABILITY

After a year and a half the battery was readministered in order to determine reliability. Only 20 of the 27 men could be tested because several had left the service either permanently or temporarily The total battery gave a reliability coefficient of +.91, P.E. = ±.03. The information tests showed less reliability than the others. This might have been caused by educational courses taken during the interval between tests.

Manuscript received March 17, 1932

News Notes

PERSONNEL RESEARCH FEDERATION

Eleventh Annual Fall Conference

The Eleventh Annual Fall Conference of the Personnel Research Federation will be held November 17 and 18 in New York City. An important part of the program will center upon reports of progress of employment stabilization experiments and studies being carried on throughout the country. The work of the Public Employment Center of Rochester and the Minnesota Employment Stabilization Research Institute, originally described at last year's conference, will be brought up to date. Other centers will present their findings. Further features of the program will be announced in the near future.

TEN YEARS OF INDUSTRIAL PSYCHOLOGY

An account of the first decade of the National Institute of Industrial Psychology (Great Britain) has recently been published under the title, *Ten Years of Industrial Psychology*. The book was prepared by Henry J. Welch and Charles S. Myers, and published by Isaac Pitman and Sons. It is a complete history of the founding, organization and progress of the Institute, the remarkable growth of which is indicated by the membership roll of 1600 ten years after founding. The book describes the Institute's vocational guidance and research activities, industrial and commercial investigation, work for the government, educational activities, as well as details of organization.

INDUSTRIAL HEALTH RESEARCH BOARD

The Twelfth Annual Report of the Industrial Health Research Board summarizes the progress of the Board's investigations and researches during the past year. In that period three studies have reached publication: (1) Studies of Absentism in Coal Mines, (2) Inspection Processes in Industry, (3) A Classification of Vocational Tests of Dexterity.

In addition, the Report contains a section on "The Work of the Board in Relation to Modern Industrial Conditions" which outlines and relates the results of studies made during the Board's existence. This over-all view is divided into four parts: industrial surroundings (lighting, noise, etc.), methods of work, industrial unfitness (accidents, absentism, etc.), and selection of employees.

NEW PSYCHOLOGICAL PUBLICATION

The Duke University Press has announced the establishment of a new psychological quarterly called *Personality*. Publication began with the September, 1932, number. A British edition is also issued simultaneously in London, and a German edition in Berlin. The Editor is Robert Sandek. Subscription is $2.00 a year.

SOCIAL INSURANCE

During the past year the Metropolitan Life Insurance Company has been publishing a series of monographs on social insurance, six of which have appeared to date. Their titles follow:

1. Unemployment Insurance, a summary of some existing governmental and private plans.

2. Old Age Dependency, some existing governmental plans for its relief or prevention.

3. Health Insurance, a summary of some existing governmental plans, providing protection in event of sickness or invalidity.

4. Social Insurance Legislation, original and present provisions of the unemployment, health, and pension systems in six European countries.

5. Administration of Unemployment Insurance, a brief summary of the essential

administrative features of governmental plans in eleven European countries.

6. Limitations of Unemployment Insurance, the need for supplementary state aid.

The first monograph outlines some of the most important features of existing unemployment schemes and summarizes the provisions, scope, contributions, amount of benefits, conditions under which benefits are paid, administrative practices, and financial status. In Monograph 5, the administrative organization and procedure of the plans of Great Britain, Germany, Denmark and Switzerland are described in detail, as typical of oustanding forms, and in Monograph 6, the schemes of the same countries are described and analyzed from the point of view of their necessary limitations.

The second monograph examines the present status of federal or state legislation now in effect in America and abroad, which which has for its principal purpose the relief of old age dependency for the general population. Monograph 3 is limited to a survey of the principal features of the outstanding health insurance plans of Germany, Great Britain, and Denmark. Monograph 4 brings up to date the information published in the first three monographs giving statistics and factual information on social insurance in Great Britain, Germany, Belgium, Denmark, Italy and Switzerland. Pension, health and unemployment insurance provisions are shown in tabular form by country.

AFTER COLLEGE—WHAT?

After College—What? is the title of an occupational study recently published by the Institute of Women's Professional Relations and based on questionnaires returned by 6665 women graduates of land-grant colleges and universities.

A few highlights in the findings: Of those women gainfully employed, 2130 were teachers, 558 were in professional work, 654 in commercial and business positions, and 308 were home economics trained women in some occupation other than teaching. Median earnings for all those employed were $1655. The chances for high earnings were best in business and in the fine arts, and were least good for those in teaching. In the professions, those in legal work and medicine reported the highest median earnings. Twenty per cent of the married women were gainfully employed. Children do not appear to handicap earnings.

The report was prepared by Chase Going Woodhouse, Ruth Yoemans Schiffman, and Florence E. Boehmer. It may be obtained from the Institute's headquarters at Greensboro, North Carolina.

DIRECTORY OF LABOR OFFICES

The August 1932 number of the *Monthly Labor Review* contains a useful Directory of Labor Offices in the United States and Foreign Countries. It covers bureaus of labor, employment offices, industrial commissions, State workmen's compensation insurance funds, workmen's compensation commissions, minimum wage boards, factory inspection bureaus, and arbitration and conciliation boards. Addresses of bureaus and names of officers are given.

CALENDAR

OCTOBER 3–7. *Twenty-first Annual Safety Congress, National Safety Council.* Washington, D. C.

NOVEMBER 11–12. *Joint Meeting of Taylor Society and American Academy of Political and Social Science.* Philadelphia.

NOVEMBER 17–18. *Eleventh Annual Fall Conference, Personnel Research Federation.* New York City.

DECEMBER 7–9. *Joint Meeting of Taylor Society and Society of Industrial Engineers.* New York City.

FEBRUARY 22–24. *Meetings of National Vocational Guidance Association, American College Personnel Association, National Association of Deans of Women, and other organizations interested in personnel.* Minneapolis.

Personnel Books

EDITED BY O. MILTON HALL

WORKERS' EMOTIONS IN SHOP AND HOME

By Rexford B. Hersey. Philadelphia: University of Pennsylvania Press, 1932, xviii + 441 pp., $3.00

Reviewed by EDWARD S. COWDRICK, *New York*

In the fields of both personnel administration and industrial psychology recent years have seen a decided trend toward efforts to penetrate the worker's mind and learn how he thinks, feels, and reacts to his environment. Approaches to this problem and methods adopted for its solution have varied with circumstances and with the individual preferences of different investigators. Whiting Williams spent months living and working with laborers (more recently mingling with the unemployed) and sought first-hand impressions by extensive observation and by sharing of experiences. In the Western Electric Company a series of controlled experiments with a selected group of workers was followed by the initiation of a plan for interviewing large numbers of employees, under pledge of anonymity, in order to find out their attitudes toward factory conditions.

Professor Hersey undertook to reach somewhat the same goal by a different route. With a group of seventeen selected workers he spent a year in interviews and observations, with careful recording and tabulation of results. These results were checked by later observations of twelve other men from different walks of life. The original group of "candidates" worked in two departments of Pennsylvania Railroad shops. Each man was interviewed four times every day upon all sorts of intimate subjects related to his physical and mental condition, his work relationships, and his home and family life. Occasional rest periods without interviews were interposed.

To carry such a study through to a successful conclusion must have required infinite patience, tact, and scientific detachment on the part of the investigator and full coöperation from the subjects, their fellow-workers and the shop foremen. The study had the support of railroad executives, foremen, and employee representatives, and profited by the counsel of eminent educators, psychologists and authorities on labor.

From the mass of material collected Professor Hersey has produced a book that is at once fascinating and thought-provoking. He tells much, and does it so interestingly that he makes the reader wish he had told more. Almost every page offers problems and alluring by-paths for thought. A dozen or more absorbing human narratives are woven into the report, and at the end the reader almost regrets that he cannot follow further the fortunes and misfortunes of some of the workers.

Professor Hersey's book cannot fail to have profound effect upon personnel administration. It challenges industrial management to recheck its conclusions about labor problems and restudy its methods of attempting their solution. Some of the subjects usually considered vital in employer-employee relations are scarcely mentioned in this report of workers' reactions. The levels of wages, for example, seem to have caused little of either satisfaction or unhappiness—although Professor Hersey doubtless would be the first to concede that this situation

would have been altered if wages had departed notably from established standards. The men studied apparently were only moderately concerned about pensions or stock ownership or unemployment insurance. Their most emphatic reactions were to the daily successes and failures in the shop, to the little triumphs and annoyances incident to their contacts with fellow-workers, to the fairness or unfairness of supervisors, to the physical conditions of work, and to home and family situations.

The book is to be especially recommended to the employer who has fancied wage earners are chiefly interested in the pay envelope and that it does not make much difference to a man what he does during his working hours so long as his pay is adequate and his leisure is undisturbed. The men studied by Professor Hersey revealed an almost professional concern about whether the work went badly or well and whether they earned the approval of their foremen or were "bawled out." They were sensitive to the prestige of different jobs and had sharply expressed preferences about the kinds of work they had to do. Moreover, they exhibited marked individuality, and one subject's reaction to a given situation was no clue to what might be that of another.

Almost as important as work conditions in influencing the minds of the "candidates," were situations related to their home and family lives. The study showed, for example, that the fact that a young man has to contribute to the support of his parents may powerfully affect his social life, his mental attitude, and his value in the shop. The financial demands of wives who want to live beyond their husbands' incomes frequently have disastrous effects. Fear of unemployment is stressed less in this study than in other recent investigations, probably because most of the men interviewed held unusually stable positions. In the case of one worker, however, dread of losing his job was the dominating adverse mental influence.

Underlying all the effects of environment, and partially eluding the search of even so skilled and persistent a scientist as Professor Hersey, are the fundamental physical and psychical phenomena which make up the character and temperament of the individual. Even in this difficult field the report contains many significant facts and furnishes much material for thought. One factor upon which the author lays emphasis is the series of "recurrent emotional fluctuations," which seems to cause each individual to be alternately cheerful and "low." In the cases studied in this investigation the spans from "low" to "low" ranged usually from four to seven weeks and the span of each individual was comparatively uniform. Professor Hersey discusses the various theories upon which other investigators have tried to explain this physical and mental fluctuation, but concedes that the question as to its cause is as yet unanswered.

The text is accompanied by numerous tables and charts, summarizing detailed data from the observations.

HOW WORKERS FIND JOBS

By Dorothea de Schweinitz. Philadelphia: Univ. of Pennsylvania Press, 1932, xvi + 199 pp., $2.50

Reviewed by MARY H. S. HAYES, *Vocational Service for Juniors*

How Workers Find Jobs is a study from the Industrial Research Department of the University of Pennsylvania. It describes the methods by which workers find jobs in a particular industry in a particular locality (the full-fashioned hosiery industry of Philadelphia), and the factors regarding this industry which may have a bearing on the methods of labor supply. This is intended as a *sample* study to indicate the type of information needed in a public employment office regarding *all* industries, in order that such an office may function to its fullest capacity in meeting the labor

demands or may determine that such demands are adequately met in this industry and direct their activities elsewhere. The survey of the full-fashioned hosiery situation in Philadelphia covered, therefore, not alone the actual process of getting jobs through employment bureaus, public or private, at the gate, through other employees, etc., but it covered as well the "dominant characteristics and changing conditions" which affect not alone the worker's entrance into the industry but his progress and permanance in it.

Philadelphia is one of the largest centers of the full-fashioned hosiery industry. Its factories are of varying sizes (50 to 2000 employees); it makes use of unskilled, semi-skilled and highly skilled labor; it employs both men and women; it displays variation in the type of machines used and the grade of product manufactured and it has an active union organization as well as both open and non-union shops. During the period between 1919 and 1929 it went through a period of rapid expansion and gave relatively steady employment to its workers. Wages were good and the employees as a group were well educated and of Anglo Saxon stock. The workers in general were young, 75 per cent of the skilled and semi-skilled workers ranging between 18 and 20. They reported themselves as liking their work and satisfied with the industry.

The method of securing information was by a questionnaire circulated among the workers at their places of employment. In the case of union shops this questionnaire was sent out with the endorsement of the shop committee and in non-union shops with a request from the employer that it be filled out. Over 4000 workers answered the questionnaire, which number represented about 20 per cent of the total workers in the industry. This information was supplemented by a questionnaire sent to the manufacturers in 61 mills and by personal interviews with superintendents, foremen, and both union and non-union workers.

Even previous to the depression of the fall of 1929, full-fashioned hosiery had reached a period of over-expansion. Notable changes in certain of the machines and operations had taken place which made a variation in the labor demands, and the study points out that information regarding just such trends in the processes of an industry should be in the hands of public employment bureaus in order that they may assist workers to adjust themselves and maintain a continuous period of employment. Other recommendations based on the facts obtained are contained in the last chapter.

The book represents a careful, thorough and impartial study of the type much needed and most useful. Miss de Schweinitz has stated that this study was made possible because of the interest and coöperation of the employer, the union officials and the workers, both organized and unorganized. A point in no way indicated in the book is the confidence manifested by all three groups in the judgment and fair dealing of the author of the study, which alone made such coöperation possible.

EDUCATIONAL EXPERIMENTS IN INDUSTRY

By Nathaniel Peffer. New York: Macmillan, 1932, 207 pp., $1.50

Reviewed by ORDWAY TEAD, *Harper and Brothers*

Mr. Peffer writes on training work in industry from the point of view of its contribution to adult education. In undertaking this, he was wisely recognized that there has developed in recent years a considerable volume of industrial educational work which is conducted on a high and broad plane, and which makes a genuine contribution to the adult education movement. The statement is almost wholly factual and it includes a brief description of most of the outstanding corporate educational

programs of recent years, concluding with a chapter regarding the contribution of the public schools to industrial education.

The book is deficient in critical evaluation, due, no doubt, to lack of first-hand information about the way in which these plans work out. There is, however, an appraisal of a good deal of foreman training work which is sound in the criticisms it offers. The interpretive value of the book would have been greater if the author in his study had taken account of the approach and conclusions of James H. Greene's helpful volume, *Organized Training in Business*.

The book lends useful support to the conclusion which has recently been gaining ground among personnel workers that industrial training programs need broadening. The evidence of this book is clear that such programs must broaden their objectives to try to train for adaptability and for greater general cultural development of the worker.

THE ADMINISTRATIVE CONTROL OF ALIENS

By William C. Van Vleck. New York: The Commonwealth Fund, 1932, $3.00

Reviewed by MEYER BLOOMFIELD, *New York*

The Department of Labor controls the exclusion and expulsion of aliens. Upon the basis of his examination of the records and procedures, Dean Van Vleck offers suggestions for the elimination of injustices and the improvement of administrative methods in the control of aliens.

There can hardly be an employing organization which does not at sometime or other deal with the question of an alien's status in its employ. Not many lawyers have made a study of this important subject. Social agencies are often asked to straighten out individual cases. A desired executive or employee on an alien status is frequently stranded here, or sent out of the country merely because the technical information was lacking which might have solved the problem.

Therefore Dean Van Vleck's study of the administrative phases of Federal alien control is of importance to others beside students of law and enforcement agencies.

Together with Jane Clark's book on the subject, these two publications are the best thus far to be found in this field.

For the alert citizen, a study such as Dr. Van Vleck's is of interest, as showing what needs to be done in carrying out immigration laws humanely and wisely. For the employer and for workers in the personnel field the present volume is indispensible for grasp of little-understood yet daily recurring organization problems.

MEDICAL SUPERVISION AND SERVICE IN INDUSTRY

Prepared and published by the National Industrial Conference Board, Inc., New York, 1931, xi + 125 pp., $2.00

Reviewed by O. L. HARVEY, *Cambridge*

In 1926 the Board published its previous report on medical work in industry. On the assumption that significant changes would have taken place within the six-year period subsequent to that date, the present study was conducted. Nineteen-thirty was taken as a cross-section year of current practices. Answers to questionnaires returned by 443 companies, believed to have medical programs, constitute the basis of this research. Over a million employees are concerned; and 53 per cent of the companies included in the survey employ less than 1,000 each.

Chapters deal with: the place of a medical department in industry; staff and equip-

ment; physical examination of employees; industrial accidents and their treatment; diagnosis, treatment, and prevention of illnesses; medical work in the small plant; medical records; analysis of work of medical departments; cost of medical supervision and service; and the value of medical work in industry.

The survey shows that medical work "is being introduced into a steadily increasing number of establishments," especially in the smaller plants; that there are more accidents per worker in the smaller plants; that medical supervision has been found to diminish this accident mortality; that more time is lost on account of sickness than of accidents; that most plants require physical examination before rather than after admission to employment, and require periodic examinations; that much of the work of the medical unit is preventive; that the costs of medical supervision are surprisingly low, as well as being profitable; and that not only employer and employee, but also the community as a whole, benefit by the medical services performed in industrial establishments.

PSYCHOLOGY TODAY

Edited by W. V. Bingham. Chicago: Univ. of Chicago Press, 1932, 450 pp., $1.50

Reviewed by F. H. Lumley, *Ohio State University*

This bringing together of the complete set of psychology talks delivered under the auspices of the National Advisory Council on Radio in Education will be welcomed by everyone who has listened in to this series. Naturally, the stimulation from hearing the author's voice, and the impressions which are unique to the medium of sound and the spoken word, will have given the listener a new view of psychology. But for the radio listener who desires to refresh his memory and study over this material, publication is not only desirable but necessary.

Of course, this book will and should find much wider use than among those who listened to the radio talks, however many they may be. It is the only general compilation of psychological writings which presents practically all aspects of the field authoritatively, and yet is directed to those persons who desire to learn about themselves without first acquiring a technical vocabulary.

It might not be amiss to mention the talks which the listeners found most worthwhile among the first fifteen. They were, selecting one from each section, "Learning and Forgetting" by Edward S. Robinson; "Anger, Its Causes and Control" by Florence Goodenough; and the two talks on "Personality" by Fred A. Moss. I think the reader will be interested in noting whether this preference of the radio audience was occasioned by the content or the manner of presentation. I think the reader can make his own study of this by inspecting the different lectures.

Although it was desirable to issue listeners notebooks and copies of the lectures separately in connection with the radio series, it is somewhat unfortunate that this system must be retained in presenting the complete printed volume. For example, we find President Angell's talk on "Psychology Today" first in the book. But the introduction to this talk and to four others comes in the middle of the book, as does also a summary of President Angell's talk and suggestions regarding books to be read. I fear that this organization of the material will limit its usefulness to the general reader.

Personally, I should like to see this book tried out as a text in an elementary psychology course. For such use, I think it possesses several advantages. First, it presents a varied approach to the different psychological problems. It does not "sell" any one view. Second, it is written in a hearable, and I think, readable style. I doubt if any psychological text book or

any series of contributions have received as much careful attention in writing and editing as has this series. The talks have been written from the standpoint of simplicity of expression, interest of material, and practical suggestions for use. This has not always been achieved, but it is at least a goal which the various contributors have had in mind.

The arrangement of the material is not necessarily ideal and reclassification might be made. For example, in the first section there is a talk on "Learning and Forgetting." In the fourth section there is a talk on "How Animals Learn." In the fifth section there is a talk on "The Basis of Learning." Evidently the person who wished to study the field of learning would have to select his material here and there.

I think that for $1.50, the ordinary reader could not make a better psychological investment.

THE PERSONNEL BIBLIOGRAPHICAL INDEX. By W. H. Cowley. Columbus: Ohio State University, 1932, 433 pp., $4.00.

So voluminous is the literature growing out of the personnel movement in American colleges and universities that a reference guide has become an urgent need. This volume fills that need very adequately. More than two thousand titles are annotated and evaluated according to importance. A workable subject index makes for easy reference to all publications on any given topic.

The author and publisher are to be criticized for the misleading title which gives no indication that the volume is devoted exclusively to *student* personnel administration. This unfortunate fact of course does not detract from its great value as a bibliographical index of student personnel. Indeed, Cowley has performed a most important service. Ownership of the book will save many hours of library research.

THE CAUSES OF ACCIDENTS. By Eric Farmer. New York: Pitman, 1932, 88 pp., $1.00.

Here is a brief but authoritative summary of a good portion of the recent psychological and physiological research on accidents, prepared for popular presentation by one of the outstanding experts in the field. General factors affecting accident causation are first discussed. The second chapter examines the matter of individual differences in accident susceptibility, establishing the validity of the concept of accident-proneness. Newbold's ingenious table for determining main causes of accidents through analysis of accident records is reproduced. Experiments with psychological tests for accident proneness are summarized. The final chapter on "Practical Application of Our Knowledge of Factors Affecting Accident Causation" contains a section on treatment of the accident-prone which is good as far as it goes, but which gives insufficient attention to perhaps the most important means of treatment—retraining.

DIAGNOSING PERSONALITY AND CONDUCT. By Percival M. Symonds. New York: Century, 1932, XVI + 602 pp., $4.00.

The successful development of tests and scales for measuring human abilities has led psychologists to seek means of measuring also the qualities of personality and character. This book is a summary and evaluation of practically all the important work that has been done in this line to date. Psychologists will welcome it warmly, for the literature has grown to such proportions as to make a book such as this almost a necessity. Needless to say, there is no other like it.

The methods described involve measurement of the environment as it conditions conduct, measurement of the actual conduct itself, and measurement of the results of conduct; they involve direct observation and interpretation of what is observed, and the testimony of others than the observer concerning the findings; and they involve the direct study of reactions and verbal testimony concerning reactions. Tests of ability and intelligence have been excluded.

More specifically, the methods which have been used for diagnosing personality and conduct, and which are described here

are: direct observation; rating methods; attitude, interest, adjustment, and other kinds of questionnaires; tests of conduct, knowledge, and judgment; performance tests; free association; physiological measures; interviewing; psychoanalysis; measures of the environment; case studies.

One could find no better guide to the literature in this field. As a friend of the reviewer said upon seeing a copy—"Just what I have been looking for."

BUSINESS STATISTICS. By John R. Riggleman and Ira N. Frisbee. New York: McGraw-Hill, 1932, xix + 707 pp., $4.00.

This book is designed to be of service to practical business men who are interested in applying statistical methods to their problems, and as a text in college courses in Business Statistics. It is written from the point of view of the business man rather than that of the professional statistician.

While the book avoids complicated mathematics as much as is possible, it is theoretically sound and thorough. Every statistical point is liberally illustrated from practical business problems. These problems cover a wide range, from business forecasting and executive control, to time and motion study and market analysis. Not only are statistical methods dealt with, but much space is also given to such matters as preparing statistical reports, and preparation of questionnaires.

PRACTICAL WRITING. By Frederick G. Fassett and Paul C. Eaton. Boston: Houghton Mifflin, 1932, 241 pp., $1.20.

Not many of us are interested in being adept in the more aesthetic forms of composition, but we do know the value of clear, vigorous writing. This book was written to help people develop the latter variety. Methods used in the construction of written material are discussed in logical sequence, proceeding from words through sentences, paragraphs and organization to the composition as a whole. Exercises are given.

WHAT KIND OF A COLLEGE IS BEST? By M. M. Stearns. New York: John Day, 1932, 78 pp., $1.25.

For the youth about to attend college, or for his parents, this little brochure should prove of genuine value. It presents information about American colleges, their costs, something of their customs, and a great deal about their traditions and the type of student they best accommodate. The author discusses the relative advantages of co-educational as distinct from men's colleges, the state universities, the small colleges, the technical institutes, the big private colleges, and the coöperative colleges. He is surprisingly impartial and delightfully friendly. The reviewer has only a few adverse criticisms. First, one is oppressed, while reading about these colleges, with what might be termed the pressure of the herd. It seems as though no adolescent prefers to walk alone. Secondly, it is not improbable that the effect of recent economic changes will be to reduce the costs of college education, with the result that the author's useful table of average expenses will have to be amended. And, thirdly, the author has limited himself to the boy's point of view only, disregarding that of the girls. This is a book that should be in use in every high school, especially in classes in occupations.

PRINCIPLES OF SOCIAL LEGISLATION. By M. S. Callcott, New York: Macmillan, 1932, xix + 416 pp., $3.00.

This is a sensibly written, interesting book, superior in many ways to the customary text-book, yet still not sufficiently original to be classed as either a treatise or research.

Chapters deal with principles, theory, and technique of social legislation; relief of poverty; child welfare and mothers' pensions; housing and city planning; public health and sanitation; public education and public recreation; regulation of public morals; labor legislation; social insurance; and humane legislation. Each chapter has a short selected bibliography appended.

From the title of this volume one might be inclined to assume that its approach was mainly philosophical. The contrary is the case. It is full of factual information, clearly and interestingly expressed. It should constitute an excellent book of

general reference for those not directly engaged in the field of social legislation, or as an elementary text for those who are engaged in studying it.

NORMAL YOUTH AND ITS EVERYDAY PROBLEMS. By Douglas A. Thom. New York: Appleton, 1932, xv + 368 pp., $2.50.

This might be called a companion volume to the author's previous "Everyday Problems of the Everyday Child." The same thoroughly competent and sane viewpoint is extended to the problems arising especially in the second decade of life.

Dr. Thom regards much of the disturbing conduct of youth as normal reactions to particular environmental situations rather than serious problems; and he lays down principles of guidance which will tend to prevent these normal reactions from becoming actual maladjustment problems. Physical development, sex adjustment, educational maladjustment, and various conduct problems are among the topics discussed.

THE LAWS OF HUMAN NATURE. By Raymond H. Wheeler. New York: Appleton, 1932, xv + 235 pp., $2.00.

This is psychology of a special brand. Not a text or a treatise, the book sets forth to give a general view in understandable form of the *Gestalt* system of psychology. Written for the general reader as well as the technical student, the presentation is more readable than translations of the works of the system's founders. It is no mere popularization, however. It is authoritative, and Dr. Wheeler, one of the foremost exponents of the school in America, adds much that is his own.

With this new and fresh viewpoint, which seems to be related to changing conceptions in most of the sciences, the book deals with the development of behavior, the "laws" of perception, learning, emotion, will, and personality.

THE COST OF LIVING IN THE UNITED STATES —1914–1930. New York: National Industrial Conference Board, 1931, 170 pp., $3.00.

In itself this is an excellent summary of trends in price levels in the United States during the period 1914–1930. Chapters deal with the measurement of the cost of living; basic date and basic budget; budget detail, prices, and indexes; and changes in the cost of living. The authors conclude that "living costs of wage-earners were definitely lower in 1930 than they have been for a number of years past," especially with respect to food and clothing; and that the current depression has probably had less to do with this drop in prices than many persons are inclined to believe.

However, the authors have ventured, on the grounds of psychological convenience, to use 1923 as the base-year instead of 1914. Their reason for so doing is that comparisons with post-war price levels are more relevent to the (presumably unsophisticated) reader, who "instinctively" inclines to interpret an index of 100 as "normal," and other years as being correspondingly above or below "normal." To the reviewer this argument seems to involve an unwarrantable assumption. Furthermore, it incurs a dual risk: first, it exposes the 1923 base-year to the indictment (within say another twenty years) of being just as "antiquated" as the 1914 level is to the authors; and, second, that of disturbing a stable scientific basis of measurement. As the reviewer understands the concept of norms, the object is to agree on a basic reference-base to which comparisons may be made.

New Books

MANAGEMENT AND ADMINISTRATION

BUSINESS STATISTICS; A BOOK OF CASES AND MATERIALS. By Joseph Lyons Snider. New York: McGraw-Hill, 1932, 498 pp., $5.00.

INDUSTRIAL MANAGEMENT; A CASE BOOK. By E. C. Robbins and F. E. Folts. New York: McGraw-Hill, 1932, 757 pp., $5.00.

INDUSTRIAL MANAGEMENT IN THIS MACHINE AGE. By Francis A. Westbrook. New York: Crowell, 1932, 423 pp., $3.50.

EDUCATION AND TRAINING

COLLEGE TEACHING. By Theodore H. Eaton. New York: Wiley, 1932, 264 pp., $2.50.

EDUCATION THROUGH RECREATION. By Lawrence P. Jacks. New York: Harper, 164 pp., $1.50.

THE EXPERIMENTAL COLLEGE. By Alexander Meiklejohn. New York: Harper, 440 pp., $3.50.

AN EXPERIMENTAL STUDY OF THE EDUCATIONAL INFLUENCES OF THE TYPEWRITER IN THE ELEMENTARY SCHOOL CLASSROOM. By Ben D. Wood and Frank N. Freeman. New York: Macmillan, 1932, 223 pp., $2.00.

PRACTICAL WRITING. By Frederick G. Fassett, Jr., and Paul C. Eaton. Boston: Houghton, 1932, 245 pp., $1.20.

VOCATIONAL INFORMATION

THE CHOICE OF AN OCCUPATION. Ed. by Albert B. Crawford and Stuart H. Clement. New Haven: Yale Univ., 1932, 504 pp., $3.00; pap. $2.00.

FUNDAMENTALS OF JOURNALISM. By Ivan Benson. New York: Prentice-Hall, 1932, 333 pp., $1.60.

THE PROFESSIONAL BOYS' WORKER IN THE YOUNG MEN'S CHRISTIAN ASSOCIATION; AN OCCUPATIONAL STUDY. By Owen E. Pence. New York: Ass'n Press, 118 pp., $1.50.

VOCATIONS IN INDUSTRY (Vol. 3). By May Rogers Lane. Scranton, Pa: Internat'l Textb'k Co., 1932, 467 pp., $3.50.

EDUCATIONAL PERSONNEL

THE ADMINISTRATION OF STUDENT PERSONNEL SERVICES IN TEACHER-TRAINING INSTITUTIONS OF THE UNITED STATES. By Marion Ernest Townsend. New York: Teachers Coll., Columbia Univ., 124 pp., $1.50.

THE PERSONNEL BIBLIOGRAPHICAL INDEX. By W. H. Cowley. Columbus: Ohio State Univ., 438 pp., $4.00.

GUIDANCE

GUIDANCE IN SECONDARY SCHOOLS. By Leonard Vincent Koos and Grayson N. Kefauver. New York: Macmillan, 651 pp., $2.50.

VOCATIONAL GUIDANCE THROUGH THE LIBRARY. By Harry Dexter Kitson. Chicago: Amer. Lib. Ass'n, 1932, 31 pp., apply.

ECONOMICS

ASPECTS OF THE DEPRESSION. Ed. by Felix Morley. Chicago: Univ. of Chic. Press, 1932, 312 pp., $1.00.

CONTEMPORARY ECONOMIC PROBLEMS. By Paul Fleming Gemmill and others. New York: Harper, 688 pp., $3.00.

THE CRISIS OF CAPITALISM IN AMERICA. By Moritz Julius Bonn. New York: John Day, 1932, 232 pp., $2.50.

INTERNATIONAL UNEMPLOYMENT. Ed. by M. L. Fledderus. New York; Internat'l Industrial Relations Inst., 1932, 499 pp., $2.50.

SALARY AND WAGE POLICY IN THE DEPRESSION. New York: Nat'l Industrial Conference Board, 67 pp., $1.50.

UNION TACTICS AND ECONOMIC CHANGE; A CASE STUDY OF THREE PHILADELPHIA TEXTILE UNIONS. By Glayds L. Palmer. Philadelphia: Univ. of Pa. Press, 235 pp., $2.00.

PSYCHOLOGY

THE FUNDAMENTALS OF LEARNING. By Edward Lee Thorndike. New York: Teachers Coll., Columbia Univ., 655 pp., $6.50.

HOW TO DEVELOP YOUR PERSONALITY. By Sadie Myers Shellow. New York: Harper, 324 pp., $3.00.

PASTORAL PSYCHIATRY AND MENTAL HEALTH. By John Rathbone Oliver. New York: Scribner, 344 pp., $2.75.

PSYCHOLOGY TODAY: LECTURES AND STUDY MANUAL. Ed. by Walter Van Dyke Bingham. Chicago: Univ. of Chic. Press, 1932, 505 pp., $1.50.

A STUDY OF ERROR. By Carl Campbell Brigham. New York: College Entrance Exam. B'd, 397 pp., $5.00.

THE VIBRATO. Ed. by Carl E. Seashore. Iowa City: Univ. of Iowa., 1932, 382 pp., $2.50.

WORKERS' EMOTIONS IN SHOP AND HOME. By Rexford B. Hersey. Philadelphia: Univ. of Pa. Press, 459 pp., $3.00.

Current Periodicals

PREPARED BY LINDA H. MORLEY, *Industrial Relations Counselors, Inc.*

ACCIDENT STATISTICS

ACCIDENTS IN MANUFACTURING INDUSTRIES, 1926 TO 1930. *Monthly Labor Review*, May, 1932, vol. 34, p. 1029–1033.

Annual survey of accidents by United States Labor Statistics Bureau covering approximately 25 per cent of total wage earners in 1930. During the 5 year period the frequency rate for combined industries showed a total reduction of 4.5 per cent while the total average severity rate increased 7.6 per cent for the period.

BUDGETS AND COST OF LIVING

COLORADO FUEL AND IRON COMPANY. C. F. & I. brings lower living costs for all company employees; voluntary reductions made in house rentals, hospital fees and other basic costs; new rate effective on June 16; nearly 10,000 persons to benefit from action of company; committee formed to investigate relief cases and administer funds. *C. F. & I. Blast*, May 27, 1932, vol. 10, p. 1.

Rents reduced at least 15 per cent; hospital rates dropped from $1.50 to $1.25, with similar reductions in light, water rates, etc.

RUSSELL SAGE FOUNDATION—LIBRARY. Costs and standards of living: a selected list of recent material on file in the. . . . *Bulletin of the Russell Sage Foundation Library*, June, 1932, no. 113, p. 1–4.

Annotated bibliography. The first two groups include bibliographies and general books, reports, etc. Under local studies there is listed material from the various state universities and community organizations. The fourth group gives family budget material of particular value for persons desiring information on budgets of low cost basis.

DISMISSAL BONUS

SCHWENNING, G. T. (University of North Carolina). Dismissal legislation. *American Economic Review*, June, 1932, vol. 22, p. 241–260.

"Compilation and summary of statutes enacted by industrial nations with a view to establishing contracts of employment for employees by restricting the employer's right of discharge." Laws on the subject are now in force in nine European countries. In Maine, Massachusetts, New Jersey, Pennsylvania, Rhode Island, South Carolina and Wisconsin there are some provisions regarding notice of termination of employment and discharge compensation.

EMPLOYEE ATTITUDES

CHANT, S. N. F. (University of Toronto). Measuring the factors that make a job interesting. *Personnel Journal*, June, 1932, vol. 11, p. 1–4. References, p. 4.

Illustrates "applicability to personnel problems of one of Thurstone's methods for the measurement of attitude and opinion." In data obtained from group of 100 department store employees and 150 Y. M. C. A. members, ages varying from 17–21, opportunity for advancement, steady work, and opportunity to use your own ideas were the factors given as most important in any job.

GREGG, FRANCES. Resistance of employees to co-partnership schemes. *Human Factor*, June, 1932, vol. 6, p. 222–227.

A psychological analysis of employee and employer attitudes that must be overcome in order to secure successful co-partnership and similar schemes. Believes that to have the support of the workers a thorough study of their fears

and problems must be made, not only an investigation on grading, averages and working conditions. "Many cases of failure of co-partnership schemes could be traced back to the state of mind of the employer which had aroused a strong resistance of the employee to the scheme . . . which no perfection of working conditions could ever overcome."

EMPLOYEE REPRESENTATION IN MANAGEMENT

DUTTON, H. P. (Western Editor, Factory and Industrial Management). Columbia's model A.—a successful experiment in industrial democracy. *Factory and Industrial Management*, June, 1932, vol. 83, p. 258–260.

Describes the achievement of the Columbia Conserve Company where the newest sweeper has the same vote in the management of business as each of the owners, and where management is entrusted unreservedly to a council of 10 members, 7 elected by employees and 3 by the owners. Regulation of hours of work, of unemployment, wages, etc. are all worked out by the council and the committees.

EMPLOYMENT STATISTICS

HABER, WILLIAM (Michigan State College). Fluctuations in employment in Detroit factories, 1921–1931. *Journal of the American Statistical Association*, June, 1932, vol. 27, p. 141–152.

Data for 12 years show not only sharp seasonal fluctuation, but an upward trend between 1920 and 1929. The highest employment was in April, 1929, with 302,000 at work, while the average variation over entire period was 34.3 per cent. Describes also expenditures of Department of Public Welfare in relief work.

FATIGUE

PALMIERI, V. M. Clinical aspects of chronic fatigue in working women. *Médicine du Travail*, July, 1931, vol. 3, p. 93–112. (Abstract in Journal of Industrial Hygiene, May, 1932, vol. 14, p. 124, from Bulletin of Hygiene, Dec. 1931, vol. 6, p. 859–860).

Gives effect of chronic fatigue on different parts of the body. While normal activity stimulates digestion, metabolism, etc., too much activity causes fatigue with resulting faulty metabolism, irritability, digestive worries, etc. Observation of 37 working women with symptoms of overwork showed that a complete rest was all that was needed to restore them to perfect health.

HOURS OF LABOR—FIVE DAY WEEK

JACKMAN, J. R. Five-day week. *Management Review*, July, 1932, vol. 21, p. 208.

Information regarding schedules of 50 companies, with particular reference to the use of skeleton staff for 6th day. Of twenty-nine companies, 3 run a staggered system so that everyone is off one-half day during the week. One company used 2 shift plan.

Result of a survey conducted by the National Office Management Association.

INDUSTRIAL RELATIONS

EPSTEIN, ABRAHAM. Employees' welfare; an autopsy. *American Mercury*, Mar., 1932, vol. 25, p. 335–342. (Abstract in Social Science Abstracts, June, 1932, vol. 4, p. 938.)

Industrial Pensions cover only about 1.7 per cent of persons over 65 years old in industry; stock ownership only participated in by one out of 31 workers in its "heyday", and unemployment benefits cover only about 50,000 employees. 514 corporations, employing over 3 million workers, spent $17.04 per employee on all welfare work.

HAIGH, DOUGLAS (F.C.I.S.). New industrial England, where the foundations of industrial peace are laid; example no. 38, Lotus, Ltd. *Unity*, May; June, 1932, vol. 11, p. 66–69; 87–90.

Describes industrial relations policies of Lotus, Inc. in the boot and shoe industry, which has 3 factories, with approximately 2800 employees.

MACHINERY IN INDUSTRY

Productivity and displacement of labor in ticker telegraph work. *Monthly Labor Review*, June, 1932, vol. 34, p. 1269–1277.

In the fields of telegraphic communication, which previously afforded employment for numerous Morse telegraphers, the automatic high speed ticker system has practically eliminated this type of worker. A direct loss of employment opportunities resulted also for operators of ticker systems.

STERN, BORIS. Technological change as a factor in unemployment (discussion). *Journal of the American Statistical Association*, Supplement, Mar. 1932, vol. 27, p. 73–75.

Limits scope of technological changes within particular industry, classifying as technological change any change, either in nature of product, method of production, type of labor or in equipment or machinery used, which resulted in higher productivity, and thus displaced labor. Measures unemployment by quantity output per unit of labor time.

MEDICAL SERVICE

EVERTS, GLENN S. (Medical Secretary, Philadelphia Health Council and Tuberculosis Committee). How the small plant can have medical and health service. *Factory and Industrial Management*, July, 1932, vol. 83, p. 293–294.

Shows how single small plant can set up its own medical and health program, by securing part time services of physician and nurse, build and equip a two room dispensary at a cost of $200 to $400.

HILBERT, J. W. (M.D.; Studebaker Corporation). Medical service in industry. *Industrial Relations*, June, 1932, vol. 3, p. 268–269.

Believes every complete medical department needs facilities for high grade first aid work, physio-therapy, X-ray, and diagnostic service, operating 24 hours a day. Since every accident may mean a law suit, the author suggests that accurate records be kept.

MORTALITY STATISTICS

HOFFMAN, FREDERICK L. Mortality experience of International Typographical Union, 1931. *Monthly Labor Review*, June, 1932, vol. 34, p. 1310–1314.

Pulmonary tuberculosis and cancer showed slight increase as causes for deaths, with a marked increase for diabetes. There were 3 suicides, as against three for preceding five years combined. Automobile accidents caused 9 deaths. There were no deaths from lead poisoning, which is considered a notable improvement.

NOMENCLATURE

EDWARDS, A. M. (Department of Commerce, Bureau of the Census). Relation of standard nomenclature to the census. *Commercial Standards Monthly*, June, 1932, vol. 8, p. 350–352. (Also in United States Daily, June 25, 1932, vol. 7, p. 780, under the title "Terms developed to describe jobs in census taking.")

Points out practical and technical difficulties involved in attempt to standardize occupational terminology. The census enumerators for the decennial census, for example, seldom see the workers themselves and in most cases the occupational designations returned represent those commonly used by the worker's family, which must be accepted, with all their inaccuracies. Although complete standardization could never take place author believes there is urgent need for a common language in occupational terminology.

PENSIONS

Operation of public old-age pension systems in the United States in 1931. *Monthly Labor Review*, June, 1932, vol. 34, p. 1259–1268.

End of year legislation had been enacted in 17 states. Number of aged receiving assistance increased from 10,307 to 76,349 (1930–1931) while annual amount spent increased from $1,714,388 to $16,173,207.

RATING

BECKMAN, R. O. (Personnel Service Division, Psychological Corporation). Yardstick for employee performance. *Management Methods*, June, 1932, vol. 61, p. 346–348. Reprint.

Gives service rating form, which was devised for measuring work performance of store managers, after obtaining the opinions of 80 executives and superintendents on relative values of the various factors to be used, personal characteristics, sales, window trimming ability, knowledge of merchandise, etc.

RATIONALIZATION

BRADY, ROBERT A. (University of California). Meaning of rationalization: an analysis of the literature. *Quarterly Journal of Economics*, May, 1932, vol. 46, p. 526–540.

Although there is some agreement over the content of rationalization as an industrial relations program, there is considerable difference of opinion both as to the scope of the "movement" and as to emphasis. Mr. Brady summarizes these different opinions under seven classifications, including efforts to eliminate waste, coördination and integration with a particular industry, progress of technological development, etc.

RESEARCH

GOODELL, FRANCIS. Joint research at Naumkeag. *American Federationist*, July, 1932, vol. 39, p. 791–793.

Experiment showed saving in direct labor cost of approximately $230,000 a year. Significant value is that labor union backed this joint research to fullest extent in findings, even when it occasioned running short time.

STABILIZATION

PERSON, H. S. (Managing Director, Taylor Society). Stabilization through regulation of investment. *Bulletin of the Taylor Society*, June, 1932, vol. 17, p. 121–124.

The proposition suggested by Mr. Person is one of social regulation, through a central economic planning agency, of the rate and amount of investment of new capital in industry.

RORTY, M. C. How may business revival be forced? *Harvard Business Review*, Supplement, Apr. 1932, p. 385–398.

Believes any practicable plan for stimulation of business activity must use public funds to encourage types of new construction, and new investments, etc. Thinks administration of any plan for economic stabilization might be placed in hands of special District Committees, appointed by the President.

UNEMPLOYMENT INSURANCE

Connecticut employers register views on unemployment reserves. *Service Letter on Industrial Relations*, New Series, June 30, 1932, no. 90, p. 431.

In poll taken of Connecticut employers to ascertain if they favored setting up unemployment reserves, and if this should be done, whether by voluntary or compulsory action, it was found that of 602 employers who voted, 33.9 per cent were opposed to reserves, and 66.1 per cent approved. Of these 398 who favored the principle, 33.4 per cent felt that employers should be free to provide them and 31.2 per cent expressed belief that a definite plan should be adopted by employers. Legislation by the state was favored by 22.6 per cent and federal legislation by 12.8 per cent.

HALSEY, OLGA S. Wages and unemployment insurance in Great Britain. *American Federationist*, July, 1932, vol. 39, p. 752–761.

"During the postwar period of falling prices and heavy unemployment, expert opinion recognizes that unemployment insurance has been a factor in maintaining wage rates, both directly and also indirectly through its strengthening of British organized labor. Witnesses agree that British employers have not met their share at the cost of unemployment insurance at the expense of workers' wages."

VOCATIONAL SELECTION

FARMER, ERIC. Present tendencies in vocational selection. *British Journal of Educational Psychology*, Nov. 1931, vol. 1, p. 246–256. (Abstract in Social Science Abstracts, June, 1932, vol. 4, p. 939).

Complex tests for special abilities, involving more than one function in their performance, rather than tests involving only simple and isolated functions, yield higher correlation with industrial efficiency.

WAGES

FISHER, ALLAN G. B. (University of Otago, Dunedin, New Zealand). Education and relative wage rates. *International Labour Review*, June, 1932, vol. 25, p. 742–764.

Study of wage rates of skilled and unskilled workers. During last 20 years margin between wages of skilled and unskilled workers has narrowed considerably. Author believes this is due to spread of education and reduction of number of illiterate workers. Statistics prove that in countries with high level of popular education the wage differentials for skill are small.

Salary and wage policy in the depression, January, 1930–April, 1932. *Service Letter on Industrial Relations*, New Series, May 30, 1932, no. 89, p. 421–423.

Of the 1718 concerns reporting, employing 3,258,666 persons in 1929, and 2,391,009 in 1932, 80.5 per cent have reduced executive salaries; 81.0 per cent have reduced other salaries and 75.4 per cent reduced wage rates. Summarizes report recently issued.

Wage scale for superannuated trade-union members in collective agreements. *Monthly Labor Review*, May, 1932, vol. 34, p. 1098–1100.

Outlines provisions regarding wages to be paid superannuated members or those who through disability cannot demand regular wage scale, in building, printing, stone, and clothing trades, and railroad and street railways.

Wages and hours of labor in gasoline filling stations, 1931. *Monthly Labor Review*, June, 1932, vol. 34, p. 1388–1394.

Study made of 2960 employees of 736 filling stations, showed that average earnings were 39.3 cents per hour, and $23.39 per week. These employees worked an average 6.5 day week. Tables give average hours and earnings by occupation, and by city.

WOLMAN, LEO (Columbia University). American wages. *Quarterly Journal of Economics*, Feb. 1932, vol. 46, p. 398–406. (Abstract in Social Science Abstracts, June, 1932, vol. 4, p. 941.)

Reviews of two books "Real wages in the United States 1890–1926," by Paul H. Douglas, and, "Earnings of factory workers, 1899–1927," by Paul F. Brissenden.

WAGE PAYMENT METHODS

NORTHCOTT, C. H. Bedaux system—a critical appraisal. *Unity*, May, 1932, vol. 11, p. 62–65.

Summarizes the impressions and criticisms of the Bedaux system. Some of these are: Standard of effort set up is sound; compared with best of other plans, it gives the lowest unit costs; the Bedaux unit is not a scientific measure of human effort; its production control method is a useful adjunct to its incentive value; little time is given by Bedaux people to improvement of methods.

Efficiency, Work-Satisfaction and Neurotic Tendency

A Study of Bank Employees

By Robert N. McMurry, *University of Chicago*

The data here reported raise the question whether the contribution of emotional stability to efficiency and to work-satisfaction may not have been somewhat over-emphasized.

This study investigates the relationship between objective scores on a typical test of "neurotic tendency" and the efficiency and work-satisfaction of representative business employees. For this purpose, the Bernreuter Personality Inventory, scored for "Neurotic Tendency," was used. Supplementing this was the Otis Higher Examination: Form B, and a special work-attitude questionnaire designed to quantify the subject's attitude toward his specific job. The subjects were 196 employees of the Harris Trust and Savings Bank of Chicago. The groups consisted of 93 women, 40 page girls and 63 men.

The "Neurotic Tendency" scores correlate only slightly with ratings on efficiency, but such correlations as do appear are all in the direction of a relationship between neurotic tendency and lowered efficiency. The Bernreuter scores appear to bear no relationship to objective data such as age, length of service, or absences.

Bernreuter test scores were found to bear a slight, but consistent, relationship to work attitudes. Those whose scores fall into the most neurotic quarter of the distribution have a slight tendency toward greater dissatisfaction with certain aspects of their jobs and tend to suffer more from monotony, irritability and fatigue in their work than do those in the less neurotic three-quarters of the group.

Of the three groups, the women were found to be most neurotic; the page girls considerably less, and the men the least neurotic.

Between Otis test scores and ratings on efficiency, correlations are found ranging from .34 to .57, which compares favorably with the results of other studies of this type where ratings of office employees are compared with intelligence test scores.

When Otis and Bernreuter tests are used jointly in the discrimination between the efficient and inefficient, the Bernreuter test does not contribute enough to justify its use as a supplement.

Thus in conclusion, assuming that the subjects have told the truth and that the Bernreuter test provides a somewhat valid index of neurotic tendency, the author suggests that there has been too much emphasis on the significance of neurotic tendency in accounting for work maladjustment, inefficiency and unrest.

THE purpose of the present study is to investigate the relation existing between objective scores on a typical test of "neurotic tendency" and the efficiency and work satisfaction of employees in a representative business establishment. For this purpose, the Bernreuter Personality Inventory, scored for "Neurotic Tendency" was used. The subjects were 196 employees of the Harris Trust and Savings Bank of Chicago—93 women, 40 page girls and 63—men.

During the past few years, more and more emphasis has been placed upon the prevalence and significance to business and industry of mild mental disorders.[1] V. V. Anderson, working with employees of R. H. Macy and Co., New York, estimates that more than 20 per cent of the working population is composed of "problem" employees. Among these are individuals who cannot learn; who suffer chronically from ill health; who are unable to adjust satisfactorily to their work; who are in constant trouble with their fellow employees; or who are in some similar fashion liabilities to their employers.[2] Culpin and Smith, working with employees of the British Post Office, estimate that between 20 and 30 per cent of those gainfully employed suffer from some form of neurosis.[3]

In general, two methods are available for use in the detection of neuroses. The first consists in an interview conducted by a trained psychiatrist; the second involves the use of some quantitative measure of performance. This second method may utilize some motor activity such as the dotting test of McDougall-Schuster,[4] or a questionnaire designed to detect conflicts, impulsions, or obsessions.[5] Of the two methods, the latter requires a less highly trained personnel; provides quantitative data; and reduces the time necessary to appraise groups of subjects. Unfortunately, however, its validity as a measure is open to some question at present. It is the aim of this study, therefore, to use a typical questionnaire with representative employees of a business to determine the relationship between its scores and their efficiency and work-satisfaction.

SUBJECTS AND PROCEDURE

Because of the size of the institution, it was impossible to obtain large groups employed at identical occupations. The women's group included stenographers, clerks, bookkeeping machine operators and supervisors. The page girls do work ordinarily assigned to office boys and are highly homogeneous

[1] Among recent books and reports are: H. B. Elkind, *Preventive Management*, New York: B. C. Forbes, 1931; V. E. Fisher and J. V. Hanna, *The Dissatisfied Worker*, New York: Macmillan, 1931; V. V. Anderson, *Psychiatry in Industry*, New York: Harpers, 1929; M. Culpin and M. Smith, *A Study of Telegraphists' Cramp*, Industrial Health Research Board Report number 43, London, 1927, and M. Culpin and M. Smith, *The Nervous Temperament*, Industrial Health Research Board Report number 61, London, 1930.

[2] Anderson, *op. cit.*, p. 8.

[3] Culpin and Smith, *A Study of Telegraphists' Cramp, op. cit.*, p. 19.

[4] Culpin and Smith, *The Nervous Temperament, op. cit.*, p. 3.

[5] Of tests of this sort, the following two are typical: L. L. Thurstone and T. G. Thurstone, A Neurotic Inventory, *Jour. Social Psych.*, vol. I, 1930, pp. 3 to 29; S. I. Franz, *Handbook of Mental Examination Methods*, New York: Macmillan, 1920, p. 170.

with respect to age, ranging from 16 to 18 years, and all have a similar social and economic background. Among the male subjects were included bank messengers, tellers, bookkeepers, clerks security salesmen, and junior executives. None of the subjects were volunteers, but were selected by the bank's personnel officer. Those were taken who could leave their work with the minimum of inconvenience to the bank. It was believed inadvisable to ask any of the subjects to remain overtime for fear that it might induce negative attitudes.

With respect to education, the subjects fell into two distinct groups. Of the 93 women, 10 had had some college or equivalent training, and 8 of these 10 had graduated. But of the 63 men, 46 had attended college and 39 had finished. The page girls all had two or more years of high school training.

The subjects were given the Bernreuter Inventory; the Otis Higher Examination: Form B; and a specially prepared work-attitude questionnaire.

In administering the Bernreuter test, it was fully recognized that it is not known whether the traits measured by the scale really constitute a neurotic personality. Nevertheless, from the similarity of the questions to those used in a psychiatric examination and from the personal experience of investigators using similar tests, it seems reasonable to assume that whatever is measured does bear some relationship to neurotic tendency as the term is clinically applied.

The Otis Examination was included primarily for the purpose of studying the joint relationship of intelligence test and neurotic inventory scores to work records. Secondarily, it was used as a check upon the procedure used, since it would show whether a reasonably high correlation between it and efficiency ratings had been secured, comparable to those reported in other studies of office workers.

The work-attitude questionnaire was designed to quantify the employee's degree of satisfaction with various aspects of his work. An effort was made to obtain expressions of attitudes which bear directly upon the subject's work. It is recognized that a work-attitude questionnaire of this type cannot help but be in many ways similar in composition to the Bernreuter scale. But the latter contains no items which relate specifically to a person's work and it was desired to obtain expressions which directly indicate the degree of satisfaction of the subject in his present job. It is probably true that neurotics have a tendency to project their general attitudes into their work situations. Likewise, it is quite possible that a reverse direction of relationship prevails, i.e., strains in the work situation may lead to the appearance of neurotic symptoms. It was believed to be worthwhile to attempt to measure the degree of this relationship between work attitudes and the traits measured by the neurotic inventory.

Items were selected for the work-attitude questionnaire upon which the subject might be expected to have distinct feelings of satisfaction or dissatisfaction. Furthermore, an effort was made to phrase the separate questions as clearly as possible. In spite of this, however, the first question, "Are you entirely satisfied with your job?"

turned out to have two quite contradictory interpretations. With some, a negative response indicated simply a dislike of the job; but with others, it meant that they were ambitious to get ahead. This ambiguity was not apparent with the remainder of the items.

The tests were administered to the subjects in groups ranging in number from five to over forty. Preliminary to the giving of the tests, a brief talk was made by the experimenter. He stated that the study was being conducted under the direction of the Psychology Department of the University of Chicago. The purpose of this investigation, it was explained, was to determine the validity of the tests themselves. It was emphasized that individual scores would not be shown to the bank and that all scoring would be done at the University. The subjects were requested to sign the forms, however, as this provided the only means of relating their test performances to their bank records.

Only the Otis test (with a 20-minute limit) was administered at the bank. The subjects were told to fill in the Bernreuter and work-attitude questionnaires at their homes. As a further evidence that the forms would not be shown to the bank, each set was accompanied by an envelope, which they were asked to *seal* before turning it in. The subjects were asked not to compare notes in answering the questionnaires. It was explained that neither is a test of skill or knowledge and that not only would they gain nothing by collaboration, but would, instead, impair the value of the study.

Nevertheless, there is no means of knowing exactly how truthful the subjects were in filling out these two forms, particularly under prevailing economic conditions. This is a factor that cannot be disregarded; it must be held in mind as a possible source of error. In spite of this, many gave affirmative replies to such questions as "Do you ever feel just miserable?" "Have you ever had spells of dizziness?" or "Does your mind often wander badly?" Comparable revelations were made on the work-attitude scale. For the less candid remainder of the subjects, there seems to be no means of determining how closely their answers approximate the truth.

The varied nature of the subjects' work precluded any consistent objective evaluation of their efficiency. As an index of the company's estimate of their efficiency, data from its official sheet was used. These sheets are compiled annually and are used as a basis for promotions and salary increases. They include the subject's date of employment, department, age, absence record, education, and a rating on nine characteristics. These traits are: cooperation, adaptability, capacity, judgment, initiative, reliability, accuracy, perseverance, and health. In the case of the women and page girls, two independent ratings were available, one by the subject's immediate superior and the other by the personnel officer who knew her best. In the case of the men, two ratings were used, but they had not been made independently.

For purposes of correlation with Bernreuter and Otis scores, these ratings were assigned numerical values ranging from 6 for "E" (Excellent), to 0 for "P" (Poor). To obtain an

index of an individual subject's efficiency, an average was taken of his combined ratings on all of the traits upon which he had been judged except health. Because a pronounced "halo" effect was noticeable in all of these ratings, it seemed justifiable to take the average as representative. Similar indices were also computed for sub-groups of traits such as reliability, accuracy and perseverance, or those traits presumed to be more intellectual (capacity, judgment and adaptability).

It is obvious that these ratings are far from ideal. It is doubtful if any two raters had precisely the same conception of the characteristics connoted by the names given the separate traits. The 93 women were rated by 17 persons. When these judges' estimates were compared with those of the personnel officer who also rated the entire group, correlations were found which ranged from .36 to 1.00, with a mean of .65. In the case of the 40 page girls, all of the rating was done by two persons whose judgments correlated .67.

RESULTS

Statistical treatment of the foregoing data for the women, page girls, and men, yields the following conclusions:

1. There is no significant relationship between scores obtained on the Bernreuter and Otis tests for women, page girls, or men. The correlations are −.11, −.08 and −.06, respectively.

2. In the cases of the women and the page girls no significant correlations are obtained between Bernreuter test scores and indices of efficiency. They are, respectively, −.13 and −.05. With the men, a somewhat higher correlation (−.27) appears. This is surprising because the distribution of the men's Bernreuter scores is more markedly toward the lower (non-neurotic) end of the scale than is apparent with either of the other two groups. With neither the women nor the page girls is there evident any correlation between Bernreuter scores and ratings on sub-groups of traits; but in the case of the men, Bernreuter scores correlate −.33 with ratings on adaptability, capacity and judgment combined.

TABLE 1

Relation between efficiency ratings and neurotic tendency (women)

AVERAGE EFFICIENCY RATING (TWO JUDGES)	BERNREUTER SCORES		
	Upper quarter	Middle half	Lower quarter
	per cent	*per cent*	*per cent*
Above Good plus	16	38	39
Fair to Good plus, inclusive	80	55	61
Fair, or below	4	7	0

In the case of the women, a correlation of −.37 is found between Bernreuter test scores and ratings on health. This relationship is not apparent with either the page girls or the men, the correlations being −.03 and −.09, respectively.

If the Bernreuter scores for the women and the men are divided into four equal groups, it is found that in the quarter having the highest (most neurotic) scores there is a disproportionately small number of subjects in the high rated group. For the women this is illustrated in table 1.

The mean rating of the highest quarter for the women (Bernreuter scores), when given numerical value, is 4.12, while that of the remainder is 4.65, a difference of .53. As the probable error of the difference of these means is .12, the ratio between it and the difference is 4.4 For the men, the mean for the upper quarter is 4.43, while that of the remainder is 4.96, a difference of .53. As the probable error of this difference is .13, the ratio is 4.1. No relationship of this sort is apparent in the case of the page girls.

3. There is no relationship between Bernreuter test scores and such objective data as age, length of service or absence records for the women, page girls, or men.

4. While the distribution of the Bernreuter scores for the women conforms rather closely to that published by Dr. Bernreuter for a comparable group, the distribution of these scores for the page girls is considerably lower (less neurotic) than his norms for high school girls; and the distribution of these scores for the men is markedly lower than his norms for college men. Dr. Bernreuter's mean for high school girls is -22.9 ± 4.8, while that of the page girls is $-45. \pm 7.2$. His mean for college men is -52.9 ± 2.8, while that of the men is -80.1 ± 5.3.

5. A moderate relationship is apparent between Otis test scores and the estimates of two raters for efficiency in the cases of the women, page girls and men. For the women, the correlation is .43 for all eight traits combined. Taking only the presumed intellectual traits (adaptability, capacity, and judgment) the correlation is .46. For the page girls, the relationship is somewhat closer, with the correlation between the Otis scores and ratings on eight traits .55. Between the Otis scores and the presumed intellectual characteristics, the correlation is .57. In the case of the men, the relationship is less marked as the correlation between the Otis scores and eight traits is only .35. For the intellectual traits it is .34.

In view of the lack of objectivity of the ratings (indicated in part by their low self-correlation) it is not surprising that they did not agree more closely with the Otis scores. Nevertheless, the correlations are not greatly different from those found in a number of earlier studies of office groups.

6. When multiple correlation coefficients are calculated for a joint comparison of Bernreuter and Otis test scores with the subjects' averaged ratings, little of significance appears. In the case of the women, the multiple correlation coefficient (.44) is superior to that of the Otis test alone with ratings (43.) by only .01. For the page girls, the multiple correlation coefficient is .57, an improvement of .02 over that of the Otis test alone (.55). In the case of the men, a slightly larger improvement is apparent through the use of a multiple correlation coefficient, as it is .39, or .04 superior to that obtained through the use of the Otis test alone.

Comparisons using only scores in extreme quartiles still indicate that the Bernreuter test adds little to the Otis test in predicting work efficiency.

7. In a comparison of the Bernreuter test scores and answers to the work-attitude questionnaire, there appears a clear, though not close relationship in

the case of the women; less relationship with the page girls; and very little with the men. In the case of the women, this trend also evidences itself in the correlation (−.37) found between Bernreuter test scores and the averages of the responses to the entire ten questions on the scale. No significant correlations are apparent in the cases of the page girls or men.

ter scores who were dissatisfied is somewhat greater than the percentage of those in the middle half, and considerably greater than the percentage of those in the fourth quarter.

Taking first the responses of the women to the separate items on the work-attitude scale as shown in table 2, it is apparent that there are some rather marked variations. In the case

TABLE 2

Relation between neurotic tendency and items on work-attitude questionnaire

QUESTIONS	PERCENTAGE IN DISSATISFIED DIRECTION BY QUARTERS ON BERNREUTER TEST SCORES								
	First (most neurotic) quarter			2nd and 3rd quarters			4th quarter		
	Women	Pages	Men	Women	Pages	Men	Women	Pages	Men
	per cent	*per cent*	*per cent*	*per cent*	*per cent*	*per cent*	*per cent*	*per cent*	*per cent*
Are you entirely satisfied with your job?	33	11	57	27	22	38	30	11	50
Is your work boring or monotonous?	37	11	43	20	9	24	9	0	25
Do you find your fellow workers congenial?	4	33	0	7	0	0	4	0	0
Is your work putting too much pressure on you?	4	0	7	2	5	0	4	0	7
Do noises interfere with your work?	16	11	36	15	9	9	20	0	7
Does your work make you nervous or irritable?	54	22	14	29	14	9	9	0	7
Do you receive proper credit for your work?	33	33	35	20	14	15	13	33	19
Are you usually tired out at the end of the day?	79	11	50	47	41	32	26	0	31
Do you change your work too frequently?	17	0	14	12	9	9	0	0	0
Is the work well organized and efficient?	21	11	14	22	9	29	17	0	9

The probable error of the percentages for the women ranges from one to seven per cent with an average of five per cent; for the page girls, from two to ten per cent with an average of nine per cent; and for the men, from six to ten per cent with an average of eight per cent.

In table 2 is shown the percentage of those in the upper, the middle two and the lowest quarters of the distribution of the Bernreuter scores whose responses were indicative of dissatisfaction on each of the ten questions on the scale. It is evident in this tabulation that the percentage of those in the first quarter of the distribution of Bernreu-

of certain items, there appears to be a significant relationship to the Bernreuter scores; with others, this is not evident. The items on which this relationship is clearest indicate that for these women, monotony, irritability and fatigue seem to be clearly related to neurotic tendency as indicated by the Bernreuter test scores. A rela-

tionship of this kind is almost certain to be a function of the particular work situation and working group. Thus it is to be viewed in the light of the kind of work these women perform and the fact that they are women who are mature, for whom the job holds probably little future and little inherent interest and who, as a whole, exhibit considerable neurotic tendency. For this group of women, the percentage comparisons do clearly indicate that certain subjective strains of the job (as reported by the worker) do not fall upon individuals at random, but are related to the individuals' range of emotional maladjustments as reported on the Bernreuter schedule.

With the page girls, there are not the clear relationships with reference to single items on the scale that are apparent with the women. But here again there appears to be a suggestion at least of a relationship of such factors as monotony and irritability with neurotic tendency as measured by the Bernreuter test. Fatigue does not seem to be as important a factor with this group as with the women, which may possibly be due to the youth of the page girls. In general, the slight relationship of work attitudes to Bernreuter scores may reflect the nature of the work and the make-up of the group. These girls have easy, variable work with little responsibility, which probably affects their attitude toward it. Likewise, this group is less neurotic than the women.

In the case of the men, the same general trends are noticeable that are evident with the women and page girls. There is a small difference between the average response of those whose Bernreuter scores are in the highest quarter and the average response of those in the remainder of the group, but this difference is not statistically significant. On the separate items, clearer relationships are observable than are evident with the page girls, but are not as marked as with the women.

For all three groups, the ambiguous question, "Are you entirely satisfied with your job?" shows no very clear relationships. The trend, if any, is in the direction of the least neurotic as more dissatisfied with his job than the employee who is either moderately or very neurotic. However, as previously suggested, this may be due to the ambiguity of the question.

SPECIAL CASES

In any groups subjected to tests of this nature, some cases are encountered which seem to prove the validity of the measures beyond the slightest doubt. Unfortunately, other, and frequently more numerous examples, deny the tests any appreciable value. This is true in this study. Of the three women having the highest Bernreuter scores, only one received a low rating on efficiency. She had a poor health and absence record, and indicated dissatisfaction with her work. The other two, although not superlative employees, were rated "Good plus" in efficiency, had good health and absence records and liked their work.

In the cases of these three women, it is reasonable to believe that their attitudes toward their work and their efficiency may be as much a function of the job itself as anything inherent in their personalities. That is, those

who are satisfied with their work may have jobs which are interesting, varied and carrying with them some measure of authority. The other may be in work for which she is temperamentally unfitted, or under the jurisdiction of a supervisor who is unreasonable. In her case, the remedy may not be discharge, but a readjustment of her working conditions.

In a fourth instance, one of the older women was found to be suffering from a severe case of involutional melancholia with obsessions d'incompletude. As she was one of the subjects who had taken the tests, her score on the Bernreuter scale was computed with interest. It was −20, which placed her almost precisely at the mean of her group.

SUMMARY AND CONCLUSION

The final results of this study may be summarized as follows:

I. The "Neurotic Tendency" score on the Bernreuter test correlates only very slightly with estimates of efficiency in the three groups studied. Nevertheless, such correlations as do appear are all uniformly in the direction of a relationship between neurotic tendency and lowered efficiency. Moreover, when efficiency ratings of the subjects whose scores in the top quarter of the distribution of Bernreuter scores are compared with the efficiency ratings of the subjects whose scores fall into the other three quarters, a significant difference is noticeable in the cases of the women and men (but not page girls).

II. The Bernreuter scores bear no relationship to such objective personal criteria as age, length of service or absences. They do correlate −.37 with estimates of health for women, although this relationship does not appear with either of the other groups.

III. The Bernreuter test bears a slight, but consistent, relationship to work attitudes. In the case of the women the correlation is −.37; with the other two, the correlation is negligible. When the average questionnaire responses of the persons whose Bernreuter test scores fall in the top quarter of the distribution are compared with the responses of those whose scores fall into the other three quarters, small but rather significant differences are observable. Only one item on the questionnaire shows a clear relationship on all three groups. This is "Does your work make you nervous or irritable?" To a somewhat less degree, the same is true of the question, "Is your work boring or monotonous?" For the men and women, the questions, "Are you usually tired out at the end of the day?" "Do you receive proper credit for your work?" and "Do you change your work too frequently?" showed a moderate relationship. In general, a high Bernreuter score indicates a slight tendency toward dissatisfaction with certain aspects of work, although this dissatisfaction seems to have no effect upon efficiency.

In these three groups, the relationship between neurotic tendency and dissatisfaction with work seems to be the most marked with the women. This is not surprising because they show a much greater neurotic tendency than do either of the other two groups; the nature of their work is probably not as agreeable as that of the men,

nor as free from responsibility as that of the page girls, and their outlook for a future with the bank is not as good as that of the men. While these tendencies are most prominent in the case of the women, they are likewise perceptible among the men and, to a less extent, with the page girls.

IV. Higher correlations (.34 to .57) are found between Otis test scores and ratings on efficiency than are obtained with the Bernreuter test. These correlations represent about the degree of relationship usually found in studies of this type where ratings of office employees are compared with intelligence test scores.

V. When Bernreuter and Otis tests are used jointly, the major portion of the discrimination between the more and the less efficient employees is the work of the Otis test. The contribution of the Bernreuter test is hardly sufficient to justify its use as a supplement to the intelligence test. The correlation between the Bernreuter and Otis tests is very low, but consistently negative.

VI. The proportion of individuals with neurotic tendencies (having a high Bernreuter score) is greatest among the women; considerably less with the page girls; and least with the men. Both of these latter groups show appreciably smaller proportions of neurotics than are indicated by Dr. Bernreuter's norms for comparable groups. They apparently reflect the influence of unknown selective factors which may include the bank's employment policy and the degree to which these employees answered the questionnaire frankly.

From the foregoing summary, assuming that the Bernreuter test provides a somewhat valid index of neurotic tendency, it appears that within groups of the character studied here, neurotic tendencies give rise to problems of only moderate importance. Neurotic tendency, as indicated by the Bernreuter test, does not correlate highly with efficiency ratings; certainly not to the same degree as do intelligence tests. Although neurotic tendency has been shown to bear a relationship to dissatisfaction with work, the correlation is slight and is evidenced only in a comparison of extremes. Thus the findings of this study raise the question whether the significance of neurotic tendencies may not have been over-emphasized in accounting for work maladjustment, inefficiency, and unrest. In some of the more favored industrial groups at least, it may well be that variations in neurotic tendency fail to account in any considerable degree for differences in performance and work satisfaction.

Manuscript received May 20, 1932

Depression and the Personnel Department

By Anne Fineman, *The Lasalle & Koch Company, Toledo, Ohio*

This description of the effects of economic depression on personnel procedure was delivered by Miss Fineman before the Personnel Group of the National Retail Dry Goods Association meeting at Pittsburgh on June 15, 1932.

Economic depression has had a profound effect on personnel procedure in department stores. This has worked chiefly through two forces: the change character of labor supply, and the changed internal structure of organizations. The results are described. Three fundamentals for successful action on the part of personnel departments are suggested: (1) a sense of obligation to coöperate with management to operate as effectively, productively, and economically as possible; (2) an abiding awareness of the broader implications of responsibilities in the social structure; (3) recognition of the immensity and uniqueness of the present opportunity to make a great record for personnel work.

TO TALK about employment and placement today is to offer an amusing but bitter paradox. The function of placement seems almost to have atrophied from disuse. Yet even in its restricted exercise there is to be noted an active quality of progress in meeting present conditions.

To the controllers and merchandisers in our stores the picture of today's business situation is graphically and painfully delineated in terms of vanishing volume, tottering transactions, and microscopic unit prices. Each day brings surprise and confusion and new "lows." The tremendous task of adaptation to conditions of constant change has really only begun. It is a task which calls for unprecedented nimbleness of thought and action, unorthodox decisions, and often seemingly unwarranted optimism.

The problems of stocks and statistics, mark-on and mark-downs are more clearly defined than the problems of people, but not more acute nor more challenging for solution. To the employment departments in our stores the picture of today's situation is drawn in terms of the superabundance of applicants who storm our doors, the heavy mailbags that are dumped on our desks, salary cuts, dwindling commissions, involuntary separations, and a thousand dangers that attack morale and stability and productiveness.

When we come to analyze our employment problem we are faced with two major considerations which have a dominating effect on our current procedure; and while on the one hand they cause our difficulties, our despair, and our bewilderment, on the other hand

they provide our magnificent opportunity. The first of these factors is the changed supply of labor. Unemployment in all lines of work has driven teachers and engineers, librarians and life-insurance salesmen to seek from us work that they think requires no special technical background. Where once we recruited our applicants from the vague population of women who were not trained for anything in particular, or from the lists of school graduates who had no impelling vocational interests, we find today a ready anxious host of the highly skilled, the well-educated, and the superior. Not alone the economic motive, the staring need for regular earnings, but a new self-analysis induced by shock, has led many of this new type of applicant to us. Many of these people have faced themselves for the first time with a searching review of their work, their fitness for it, their possibilities, and some have emerged with a new interpretation and understanding of themselves, and a desire for new work to integrate with their personalities and capacities. Perhaps in a way, the development of personnel programs in our stores in recent years has contributed a new dignity to our standards and we have a right to attract the best of the available material today. At any rate, we have here a factor of vast importance in the changed labor resources. For employment management it presents these questions: (1) how shall we avail ourselves of these people under the almost stagnant condition of labor turnover? (2) will we be tempted by the availability of superior people to take on those who are not adapted to our work? (3) what degree of importance shall we attach to the inevitable loss of many of these people when more normal conditions open up opportunities in their previous lines of work?

In addition to this element of the changed supply of labor, there is the second factor of changed conditions within our organizations. Three years of unrest and disquieting circumstances have resulted in a sloughing of inferior, maladapted, and superfluous people. Simultaneously there has been a shifting of organization lines; responsibilities have been realigned; executive duplications have been condensed; charts of authority have been simplified. Elimination and unification have wiped our slates clean —or practically clean. Most of us are in that most enviable position in retailing—the "open to buy state."

What is happening in our personnel work under the pressure of these two forces—the changed supply of labor and the changed structure of our organizations? Examine the consciousness of any employment manager and you will find a stream something like this—the question of covering floor and counter space with reduced personnel, misfit commission systems, the "fear complex" engulfing most of our people, the problem of developing potential executive material under the strain of almost total employment stoppage, problem cases whose acuteness is sharpened by a crisis, a vastly different buying public presenting new personnel problems, a steadily-growing part-time force .... these are only a few. To do battle with this formidable array requires, it seems to me, three fundamentals

for any successful action on the part of those who perform the employment function:

(1) A sense of obligation to coöperate with management to operate the machinery as effectively, productively, and economically as possible.

(2) An abiding awareness of the broader implications of our responsibilities in the social structure.

(3) Recognition of the immensity and uniqueness of our present opportunity to make a great record for employment work.

In our fundamental obligation to management we must pose ourselves these questions for answer: (1) Is our selection as nearly fool-proof as possible? Are we bringing to bear every device and method that fruitful personnel research has placed at our command? Are we exercising the great care and caution the situation deserves? Is our attitude in employing people one of being selective rather than rejective? Is our analysis of failure and survival records pointing the way to greater discrimination? (2) Does our placement of people reflect skill and adroitness and the urgency of success? Are we studying our people to the end that we may utilize undiscovered talents, and help develop new ones? Are we daring enough to experiment with new possibilities in placement, to try an untraditional type of salesperson in our bargain aisles, to "make" our own coat saleswoman instead of picking up the usual drifters at the peak of the season? Do we investigate all the possibilities for transferring and shifting within the organization when vacancies occur —obviously a more economical procedure? Do we try to promote versatility among our workers in order to increase the mobility of our staffs? Do we express in every job we fill a genuinely articulate manifestation of our responsibility to produce for the management? (3) Is our follow-up worthy of our care in selection? With the minimizing of hiring needs we are now permitted the time, and more important, confronted with the necessity for a more thorough, scrutinizing follow-up than has been possible before. Our department managers, under the pressure of making figures, have a right to question and criticize our efforts of collaboration. It is not by talking with job-seekers all day in our offices, but by watching and talking with those who hold them in our stores, that we discover the vulnerabilities of our personnel procedure. Post-employment supervision assumes increased importance when the very limited number of selections must be kept under critical observation and must be carefully evaluated. (4) Are we undertaking our full responsibilities toward the development of a firmer coördination of employment and training in our stores? In fulfilling our obligations to management, we cannot ignore the fact that for the effectiveness of employment work, training becomes more, not less, important at a time when standards are more exacting, when the output of marginal producers must be accelerated, when transfers must be helped toward adaptation, when we are introducing into our organization people from these new sources, trained in techniques altogether alien to retailing. (5) Are we meeting the grave prob-

lem that faces management in the maintenance of morale? With dismissals and salary adjustments and longer working hours and general unrest and uncertainty everywhere, it is not easy to thwart the existence of a fear complex—paralyzing, enervating and destructive. But it is the logical function of the employment office, which negotiates employment and termination of employment, to combat strenuously the grip of fear and insecurity. It is like a delicate juggling act, this dual rôle we must play of looking for possibilities of weeding out the unfit, while allaying the general worries.

In our handling of these important features of selection, placement, follow-up, coördination with training, and morale, we express our fundamental duty to management. Now consider the second basis for a program of successful action on the part of the employment division. This collateral basis is the need for an awareness of the wider implications of our social and human responsibilities. As employment managers we are in a sense the villains of the tragic drama being enacted today in our economic structure. We are the people who alone in this world seem not to be moved by the sight of an unemployed man. We seem indifferent to the college graduates who put on for us special exhibitions of their superior preparation, and who leave resentful that business can find no place for their many advantages. According to the magazines, we are the people of the stony hearts, forbidding gaze, and shoulder-shrugging attitude. We won't take old people, they say, because we can get young ones. We won't take young ones because we can get old, experienced "help" for the same money. We're heartless about dismissing a man with three children to support. We use no judgment at all about the number of married women we employ. We let out a woman who has worked for us for ten years and has done as she says the best she knew how, and the next day we take on someone whose only connection with storekeeping has been in the rôle of customer. We are a strange, mad lot. But when the correspondents for the magazines are not watching us, we are apt to be doing a bit of worrying about Mamie Smith who really has possibilities but needs to be prodded, and needs her job, too. We are likely to be cultivating a few wrinkles fretting about what to do with the fine young man who applied this morning and who we know would make excellent material for us, if we had a place for him. Most of our actions are prefaced by a solemn "to be or not to be"—ruthless with the slow and unresponsive in our organizations.

Out of the complexity of this human scene at least a few things are clearly ours as employment people to deal with. At a crisis human values are sharpened, and human problems crystallized. Somehow we get to know our people better, their personal difficulties and problems, their environmental influences. This knowledge makes a finer kind of personnel work possible. Because we can focus our time and efforts more upon a fairly stationary staff, possibilities for development and promotion spring to our touch, and we find opportunities

for the consistent practice of the soundest personnel policies—more transfer and retaining, more promotion from within, less spasmodic dismissals. Because we know the costliness of turnover, we resort to every available method of training before we cast off our maladapted. Because we know the irascibility of people under strain, the highly sensitized nature of human beings under stress, their increasing complexity on the psychical side, we extend tolerance and patience almost to the point of weakness. We run the gamut from the most platitudinous forms of encouragement to the actual coming to grips with problems of mental and moral disintegration. To complete a rational plan of action we take on the full emotional context so that we can bring to our task not only the restraint of objectivity but the reach of a sincere understanding and sympathy.

These two bases for a fit employment scheme—recognition of responsibility to management on the one hand and to the human beings in our area of contact on the other—lead naturally to the third fundamental consideration, a view of present conditions as a great opportunity. If we contribute through our efforts to a better pattern of economic equilibrium and social well-being, we shall have written a noteworthy chapter in personnel work.

Manuscript received June 20, 1932

Sifting Civil Service Applicants by the Successive Hurdles Method

By Herbert A. Toops, *Ohio State University*

When the supply of trained applicants greatly exceeds the demand, it is possible to select a very superior working force. But depressions cut the budgets for examining, with the result that when 200 applicants apply for a half-dozen jobs, as in Civil Service, there is a temptation to use the successive hurdles method of selection. Dr. Toops points out the dangers of this method unless the successive examinations are arranged in order of decreasing validity.

IN ORDER to save scoring time, testing materials, and other costs, Civil Service Commissions increasingly are attempting to set up a successive hurdles method of choosing candidates for eligibility lists for municipal and governmental positions.

The method works substantially as follows:

1. A very large number of applications for a given position is secured.

2. A preliminary elimination of certain candidates is made, probably through scanning certain questions in the application-for-examination form. For example, in a proposed examination for policemen all applicants less than 5 feet 10 inches in height are at once rejected.

3. Some form of actual examination follows. A minimum passing score is arbitrarily set by the examiners, or a minimum limit is set by consideration of the fact that the passing mark included a certain percentage (say thirty) of some previous group of applicants for the same or a similar position. Obviously, also, the critical score may be set *after* the scoring of this first examination is completed and may be based on the statistical consideration that the passing mark will eliminate a certain definite percentage, say 30 per cent, of all the applicants. Those who fail to attain the passing mark are eliminated from further consideration.

4. Another examination is given the survivors; and the number of papers to be scored is reduced by reason of the fact of the previous elimination. This examination still further reduces the number allowed to take the subsequent examination. Ultimately the large number of applicants is boiled down to a small number whose names appear on the eligibility list for appointment, according to the set rules of the particular commission in question.

Critical consideration of the above will indicate that the following statements are true:

1. A large number of applicants thus has been reduced to a small number of eligibles.

2. All of the eligibles have passed the minimum requirement on *every* test and therefore represent (ostensibly) a high degree of "competence."

The above conclusion of course makes the implied assumption that the tests used for the siftings were highly valid. It furthermore implies —or so it would seem to the writer— that the following verbal formula is the correct formula for the organization of personality: "As a chain is no stronger than the weakest of its links, so for personality"; and that, consequently, it is impossible on the job to compensate for a weakness in one trait by a corresponding, even overwhelming, strength in another. Possibly we can say also that there is here an implication that the several minimal standards are *equally serious* from the viewpoint of this organization of personality.

Certainly the practice of civil service would seem to assert that the following proposition is true: "There is a very large amount of talent available; consequently, *any* method of successive hurdles may be expected to arrive at a good selection."

Unfortunately we have not tested the above assumption; and possibly we should be unable to do so adequately if we made the attempt. In the absence of actual check-up, it is entirely possible to arrive at useful conclusions merely from a consideration of statistical theory.

One of the foremost considerations is that *the order of the application* of the tests[1] is important. Let us take, for example, an extreme case as a concrete illustration. Suppose we have 100 applicants for a particular job; that we apply in succession as above indicated three tests each of which has a validity of zero. Suppose, furthermore, that as the result of each examination we so set a minimum critical score as to eliminate exactly half of the applicants remaining at the time of taking the test. Suppose, furthermore, that no applicants eliminate themselves by failing to show up for the specific examinations as given. As a result, then, on this series of examinations the first test will eliminate 50 applicants. The test having zero validity, half of the good people and half of the poor, roughly speaking, will be eliminated. The remaining applicants will be a random sampling of the original 100. The second test will eliminate an additional 25 so that there will be 25 left to take the third examination. The 25 who take the third examination are still a random sampling of the original 100, but the sample, which is smaller, will be a somewhat "poorer" sample. Plainly, after the third test is scored, only 12 applicants are left. These applicants are still a random sample—although a small one, there-

[1] Our use of the word tests is perfectly general; that is to say, a test may be an interview with a former employer as to the honesty of a former employee; the results of a numerical rating on an oral interview; the quantitative rating of an applicant by a fellow applicant; a score on an intelligence test, or a mechanical assembly test; or a rating scale judgment.

fore poor—of the original 100 applicants. Nothing has been accomplished except to reduce the number of applicants from 100 to 12; that is, nothing save to convince the public that a rigorous elimination policy has been enforced; that the applicants "have been given the opportunity of taking an examination"—which mathematically amounts to "have been given three throws of a two-faced die to see whether they will or will not be lucky enough to be chosen among the twelve." Finally, let us suppose that the twelve are given a performance test to determine the applicant's skill and competence for the particular job in question, as a result of which the selection is finally reduced to six. If this test has considerable validity, the better six of the twelve most recently surviving will finally be certified for appointment. Under the conditions assumed above it is quite obvious that the six are by no means synonymous with "the *best* six." If we had flipped dice instead of giving examinations in order to determine the twelve it would be obvious to anyone that "once in a thousand million times" the twelve actually *poorest* men of the 100 could survive the three dice throws, and so be allowed to take the final performance examination; yet the same type of reasoning is not customarily made with respect to tests, which, then, is the justification for this article. The applicants do not question the validity of the test, at least publicly. Civil Service examiners are not overly diligent in this respect. Both parties in the matter would probably throw up their hands with great horror at the possible proposal to use dice for the purpose mentioned. Nevertheless, when using tests which have a validity of .15 or .20 or thereabouts, one is dealing with "almost dice-like tests." Yet all consciences are appeased by this appeal to rationality!

It would be possible to construct tables showing what would be the effects on the competence of those appointed of using various critical scores, various validities of tests, and various orders of presentation of the several tests. Such tables would be of interest only to the biometrician, to whom the suggestion may be of sufficient incentive to bring about their construction. It seems sufficient for the moment to point out only what specifically may be done in the matter by one who is choosing individuals by the method of successive hurdles.

This principle is simply the following: *The most valid test should be given first, followed by the next most valid, etc., until the least valid is given last.* It is clear that by this procedure at each elimination the less competent, if not the least competent, in general will be eliminated in greatest proportions, to that extent enhancing the opportunity for the very best individuals of the 100 to survive the application of the nth hurdle. The mathematicians of probability tell us that out of some 100 applicants we may make up 1,192,052,400 different combinations or sets of six men for an eligibility list. Only one of these eligibility lists is the best possible. Fortunately, also, there is only one worst possible combination. Tests of low validity are only slightly less

unlikely to pick the worst possible combination than to pick the best possible combination. However, the above argument makes it clear that the order of presentation of the successive hurdles is very important.

In view of the fact that items of considerable difficulty [which, it seems, are necessary in order to secure high validity] may be very discouraging to the applicant if given initially, a still better technique than that proposed above may be that of giving an initial buffer test which will eliminate only a very few applicants, those who are so essentially weak in several "links of their personality" that no harm can be done by their early exclusion. Then after the warming-up period of examining has been gone through with, it would seem desirable to introduce the hurdles in the order of *decreasing* validity.

Some of the sentiment for a minimum competence level on each of a number of tests seems to derive from the consideration that, as an example, "it is not desired to overweight such items as experience, a very large amount of which may be an undesirable indicator of competence." It is clear that such reasoning is fallacious. If experience, for example, has a curvilinear regression—that is, with increase in experience, competence in the individual grows to a maximum and thereafter decreases perhaps toward a fixed low asymptote—then some correction for this curvilinearity of the trait should be taken care of *in the scores assigned* to experience. Concretely, experience of one year and of fifty or more years may be given a zero credit; experience of two years and forty to forty-nine years may be given five points credit; etc. At any rate, it is clear that the question of scoring should not be involved in the reasoning as to the desirability or lack of desirability of the successive hurdles method of elimination as compared with the summating-of-traits or averaging-of-scores method of determining competence.

Manuscript received May 11, 1932

Personnel Management in the Collegiate Business School

By Frank T. Stockton, *School of Business, University of Kansas*

Dean Stockton surveys the present status of teaching personnel management.

Most of the personnel management texts issued in 1931 suffer from the same lack of balance found in their forerunners. Certain important topics are ignored or minimized. Little fundamental management theory is given. Personnel management still plays a subordinate rôle as a field of instruction in collegiate schools of business. Instructors with a new type of training must be developed. A tie-up between labor economics and personnel management is needed. Schools of business should give more attention to research in the personnel field. There are reasons for believing that the study of personnel management will become of increasing importance in collegiate business schools. At present, however, special personnel curricula seem unwise.

DURING the year 1931 a material increase took place in the number of books on personnel management offered to collegiate instructors for use as texts. To the volumes previously written by Cowdrick, Hackett, Tead and Metcalf, Watkins, Bruére and Pugh, and Hulverson, were added books by Baridon and Loomis (*Personnel Problems*), Ford (*Scientific Approach to Labor Problems*), Walters (*Applied Personnel Administration*), and Mathewson's revision of Scott and Clothier (*Personnel Management*).

An analysis of the ten books indicated above shows that the publishers have been promoting some volumes as general texts which are in reality treatises on special phases of personnel management. Further study of the ten leads one to believe that many writers of the more inclusive personnel texts go too far in indulging their hobbies. For example, one devotes eight chapters to forms, charts, scales and tests, while he covers pensions in two pages, group insurance in one page, and entirely ignores employment regularization. Another shows special interest in job analysis by giving three chapters to it, while he omits all mention of employee representation and regularization. A third over-emphasizes interviewing and wages, while a fourth and fifth go afield to introduce chapters on statistical method.

Illustrations of a similar sort can be drawn from the remaining five books. The best balanced presentation, perhaps, is found in Baridon and Loomis.

These writers also deserve commendation for endeavoring to organize the entire subject under eight main divisions, instead of offering twenty or thirty miscellaneous chapters on as many miscellaneous topics. Classification and organization will do much to promote orderly study of what has heretofore seemed to many a maze of heterogeneous material.

Certain phases of the personnel field seem to be studiously avoided by text-book writers. Little or nothing is said about the relation of a company's personnel program to the business cycle, the stage of company development, and the production and marketing policies of the concern. No mention is made of the personnel policies followed by the largest employer in the country—the United States Government—except some reference, perhaps, to the use of various tests in the army.

Wage theories are discussed in only two of the texts. In one the treatment of wage doctrines is confusing and is not connected in any way with what is said about wage systems. The other book, Cowdrick's, presents a brief but clear discussion of the evolution of wage theory and endeavors to analyze the relation of the marginal productivity doctrine to actual wage situations. Again, the rôle of the trade union movement and of labor legislation, in compelling management to give some thought to wages, hours, and working conditions, is ignored by all but one of the writers, who traces the evolution of management's attitude on personnel matters. The place of present-day collective bargaining in the personnel picture is also neglected except by Baridon and Loomis, and Cowdrick, who, strangely enough, are not university professors. Other theoretical and practical problems of growing current interest, such as employment regularization and related matters, are often given scant treatment.

A final complaint is that texts on personnel appear to be lacking in any statement of fundamental management theory. In this respect the newer books, while they are vastly superior to Simons and Calder in their discussion of techniques, represent but little advance over the pioneer presentations. In any field of study, general principles are of far more importance than are masses of facts, tables, charts, and graphs illustrating how John Doe and Company "did it." The student needs to discover some of the philosophy of business relations even more than he needs to learn a tactical method which may soon be out of date.

All of the above, if it be sound, goes to show that the writing of general books on personnel is not yet a fine art. Instructors who follow any one book blindly are likely to present a somewhat distorted view of the subject. Reference to a large number of excellent special articles is necessary, and the instructor must work out his own philosophy of the subject. The main reason for the existing difficulty seems to be that many of the books have been primarily written for the personnel profession, the industrial psychologist, or the industrial engineer. With possibly one exception, none of the volumes under consideration have been developed from

the viewpoint of collegiate instruction in business where fundamental economics presumably is tied in with basic management considerations.

The business student is, or should be, interested in wage principles, unemployment, pensions, labor legislation, and collective bargaining, as much as he is in promotion charts, job descriptions, fatigue curves, accident prevention, and the preliminary interview. It is true that some of the first mentioned are ordinarily covered in labor economics courses. That is no excuse, however, for absolutely ignoring them in a discussion of personnel management. The work of the business student in personnel should cover in some degree the whole field of industrial relations. Textbook writers who dodge certain issues, either because it is feared they may be distasteful to ultra-conservative management or for some other reason, give the student reader a warped conception of the subject which is entirely unwarranted.

It is very doubtful whether the publication of four texts in one year is any indication of a suddenly increased interest in personnel problems and policies, either in universities or in business. Although it has generally been the case in the past that periods of depression, with their accompanying unemployment, have stimulated public and private interest in labor pathology, the tendency in such times has been for legislative action to be emphasized rather than for increased managerial interest in selection, training, and related personnel operations to be promoted. It is true that business leaders today are giving serious study to employment stabilization and similar problems, yet the vital interests of management lie at present in the development of markets rather than in the reduction of costs through improved personnel control. Markets are few while men are plentiful. In the face of growing deficits employers must consider means of increasing incomes from sales, rather than programs which promise long-run economies.

It takes but little examination of the curricula and courses of our collegiate schools of business to discover the subordinate rôle played by courses in personnel management. Bossard and Dewhurst, in their volume on *University Education for Business*, found in 1928–29 that personnel ranked 21st in class hours among the subjects offered by 38 undergraduate members of the American Association of Collegiate Schools of Business.[1] Even such subjects as production, foreign trade, statistics, and economic history outranked it. Accounting was credited with 22,259 hours, banking and finance with 16,584, and transportation with 6,958; personnel was credited with 2,360. Figures to show the actual number of students in the various subjects are not available. There are a number of schools in the American Association which do not require any work in personnel even in their "general business" curricula. This situation exists in spite of the fact that our schools of business make much of the functional approach to the study of management. Without casting any aspersions upon account-

[1] Page 290.

ing, finance, and marketing, it would seem worth while, if necessary, to reduce the curricular requirements in these subjects in order to give some place for the study of a business function as pervasive in character as is personnel.

The lack of properly trained instructors is one factor which has retarded the development of personnel as a field of collegiate study. Bossard and Dewhurst pointed out that instructors in the subject in schools of business have been recruited largely from men with either labor economics or psychology interests. It is safe to say that neither group has had the sort of training which would enable it to be thoroughly at home in the entire field. The future should see a type of instructor who is soundly trained in economic principles, labor economics, production, finance, marketing, insurance, statistics, business law, accounting sociology, and psychology, and who has possibly had some practical experience in handling personnel. While some training in engineering beyond what one finds in courses in production management would not be amiss, it does not seem necessary from the school of business standpoint that anything like a full engineering course be required.

In this connection it is of interest to note that Dean Kimball of Cornell has no confidence in men provided by economics departments as personnel instructors and has stated quite positively that engineering schools must train their own men for the subject. It seems logical that the type of engineer who is interested in seeing what makes the wheels go round, rather than in knowing the physical composition of the wheels, should be a likely candidate for an instructor in personnel; provided, however, his understanding of the various phases of business and human nature is enlarged much beyond what he has learned in the mechanical engineering laboratory or the drafting room. While the machine shop and other realms of the engineer present important personnel problems, the same thing can be said of banks, mercantile establishments, insurance companies, newspapers, and all the non-mechanical departments of our manufacturing concerns. Even in the machine shop it might be possible to make application of some personnel principles already established by entirely different types of concerns. Furthermore, the personnel program of the machine shop cannot be isolated from the program of the entire business unit with which the shop is connected. A united policy must be followed throughout the plant. For all these reasons, the instruction in personnel given to engineering students should be as comprehensive in character as that afforded business students.

Unfortunately, at the present time little relationship exists between courses in labor economics and personnel. In most instances no previous study in the former is prerequisite to the study of the latter. An examination of twenty-four recent university catalogs discloses only three schools which make labor economics a prerequisite. In a few cases a year's work in the two fields is offered in a combination course under some such title as "Industrial Relations" or "Problems of Labor and

Employment Management." Again, it is seldom that the same instructor handles both lines of work. In the same twenty-four universities, only seven instructors were found who taught both labor economics and personnel management. Not only are the two lines of work handled in an unrelated way, but in many instances there even appears to be more antagonism than sympathy between the instructors in the two fields. Labor economics men who have the social point of view, coupled perhaps with an anti-management complex, look with suspicion upon personnel management as a means of driving labor and eliminating trade unionism. They disdain personnel further because of its apparent lack of theory. The personnel instructor, on the other hand, thinks that he at least is working in terms of reality, and may be inclined to dislike the fault-finding tone of labor economists and to belittle the socio-economic approach to industrial questions.

There is some evidence that the breach between the two subjects is being healed. For example, some texts on labor economics (still too often called labor problems) have incorporated chapters on labor management. One writer, Watkins, has prepared texts in both fields. The rise of men like Millis, Schlichter, and Feldman, who have comprehensive interests in the labor field, has already done much to bridge the gap that has looked so formidable to those with partisan minds. Ultimately we may develop the same relation between courses in labor economics and personnel as there is between transportation and traffic management, and between money and banking and bank management.

While university bureaus of business research have been quite active in issuing marketing and finance studies, they have evinced but slight interest in personnel research. One of the reasons for such a situation is that most of the directors of the bureaus are either marketing or finance men. Again, business concerns have had a greater interest in these two fields than in personnel. Unless the field is to be surrendered to the psychologists and engineers, the business schools should take steps to advance their own research activities at an early date. More studies of the type undertaken by the Wharton School should be made. Additional case material similar to that contained in Volume 4 of the *Harvard Business Reports* is also needed. In sales management, which is to some extent a personnel field, many good problems have been prepared by the Harvard, Michigan, and other university research bureaus.

There are several reasons for the belief that personnel management will increase in importance as a subject of study in collegiate schools of business. In the first place, the rôle of the human element in industry is constantly growing in general significance. It certainly is not an uncommon thing to hear an executive say that he would rather lose his entire plant than to lose his organization. Secondly, the placement and advising activities of business schools have gradually led to the establishment of personnel offices and to the preparation of student personnel studies. There are a

number of institutions which have not only made careful analyses of the background, interests and progress of business students, but which have also covered the rest of the undergraduate body in the same way. Finally, the growing interest of engineering schools in management has already resulted in making personnel a favorite elective for many of their students, as well as a required course for others. The attention which schools of engineering are giving to personnel at such institutions as Cornell, Pennsylvania State College, and Purdue is a good indication of the trend of thought among their faculties.

While few, if any, collegiate schools of business claim today that they are training executives, they are all engaged in training men for positions which eventually should lead to executive or administrative responsibilities. Many required subjects in the business curricula deal with phases of business which come only indirectly within the subsequent experience of some students. No graduate of a business school, however, can possibly escape direct contact with personnel problems unless he operates a business of his own as a "one-man shop." It makes no difference whether he goes into a bank, a department store, a public utility, a manufacturing concern, or an insurance company,—in every case he is part and parcel of the operating personnel.

Some study of personnel activities should enable the young business graduate to determine at an early date what sort of "man-power" policies his employer pursues. He can judge whether the employer is an exploiter who has oversold him on the possibilities of his job, or whether he has been fortunate enough to land in a concern which is looking for talent and is willing to pay for it. He should find less difficulty in adjusting himself to the job following his induction. He should understand the importance of promptness, regular attendance and the observance of orders. He should also appreciate the significance of training, productivity, and initiative, as means of advancing himself in the organization. As soon as the graduate has his first promotion to a minor supervisory position, he is compelled to share in the administration of the personnel policies of his concern. Consequently, he should have some appreciation of his responsibilities and of the means of meeting them.

Although personnel should be studied by every business student, it does not follow that every business school should set up a personnel curriculum. It is true that most members of the American Association of Collegiate Schools of Business offer enough courses bearing directly or closely upon personnel to prepare adequate curricula. It is not sufficient, however, merely to have a paper curriculum; the student who elects it must be able to "get somewhere" after he has taken it. When he elects the personnel curriculum, he is likely to believe that the very existence of such a curriculum implies an ability on the part of a graduate to enter directly into a personnel department. In all except a very few cases, however, he discovers that his plans of becoming connected immediately with such a department completely mis-

carry. He finds that the personnel staff is not recruited from university seniors but that it is built up from men and women who have been transferred to it from other jobs after proving that they have the special knowledge and qualities required. The writer confesses that for sometime he contributed to the practice which he has just condemned. Kansas, however, finally discontinued the personnel curriculum to avoid the constant embarrassment which it created. It has retained its curricula in accounting, finance, and marketing, since its graduates go directly into each of these several fields.

In 1928–29 curricula in "personnel," "labor," or "labor and personnel" were announced by nineteen of the undergraduate schools affiliated with the American Association of Collegiate Schools of Business. In view of the misleading implications set up by personnel curricula, and in view of the retrenchment campaigns now taking place throughout the academic world, some shrinkage in the number of personnel curricula undoubtedly will, and should, take place. The present is an opportune time to study the objectives of business education and to eliminate courses and curricula which are out of place.

Manuscript received May 12, 1932

Measuring Effectiveness of Personnel Counseling

By J. E. Walters, *Purdue University*

It is a wholesome sign of progress when personnel counselors seriously undertake to measure the relative value of alternative procedures.

A program of personnel counseling was developed and carried out with 994 freshmen in the two first-year classes at Purdue University during 1930–31 and 1931–32. The purpose of the program was to improve the scholarship of freshmen who were delinquent—below passing—at the end of the first eight weeks of school.

The delinquent freshmen were divided into three equal groups by random sampling. One group was counseled by instructors, another by selected seniors, and the third remained uncounseled to serve as a control group. The counseling continued throughout the freshman year. The groups were compared statistically before, during, and after counseling.

Those counseled by the seniors made the most progress, and significantly more progress than the control group. Those counseled by instructors also made more progress than the control group. The freshmen opinions obtained through questionnaires revealed that about two-thirds felt they were helped by the counseling. The students counseled by instructors believed that they were helped more than those counseled by seniors. The results indicate that personnel methods can be applied successfully to the counseling of students for the improvement of scholarship.

THE number of students in the colleges and universities of this country has grown faster proportionately than the number of teachers since 1900. In 1928 each teacher had an average of fourteen students whereas thirty years ago he had only ten. Generally, about fifty per cent, and in some special professional schools as high as seventy-two per cent of the students who enter college do not graduate in the normal period of four years. Scholastic delinquency reports during the year in some universities include as high as sixty-five per cent. These facts suggest a possible need for the individualization of higher educational processes, and of the improvement of students' personal adjustment.

At Purdue University in 1929–30, sixty-five per cent of the freshmen were below passing in scholarship in one or more subjects at the end of the first eight weeks of school. In the preceding four years fifty-one per cent of the engineering students who entered completed their engineer-

ing courses. These data revealed a serious problem. The solution decided upon was the development of a program of personnel counseling by teachers and seniors for the improvement of scholarship of freshmen, and measurement of the effectiveness of this counseling.

Five outstanding seniors in the School of Mechanical Engineering were selected and trained to take part in an introductory experiment.[1] The two hundred and twenty freshmen in the School of Mechanical Engineering, 1929–30, who were below passing in scholarship at the end of the first eight weeks, were divided into two groups: one half to be counseled by the five seniors, and the other half to remain without counseling. By the end of the first eight weeks in the second semester the senior counselors had decreased the delinquency in their half thirty-four per cent against thirteen per cent in the uncounseled half, making a net decrease in delinquency by the counseled group of twenty-one per cent. The results indicated that counseling could decrease scholastic delinquency, and that it warranted further investigation.

Personnel methods involve the application of scientific principles—adequate selection, training, and measurement—to human problems. Counseling is defined as "mutually advising, or deliberating together." It follows, therefore, that personnel counseling should involve the application of scientific selection, training and measurement to "mutual advising and deliberating together" of counselors and students.

Before starting the main experiment, college counseling methods were investigated by requesting a description of counseling programs from fifty selected member colleges of the American College Personnel Association. Replies were received from forty-three colleges. Thirty-five (81 per cent) of those replying reported counseling programs, and eight replied in the negative. The counseling programs were classified into the following types: (1) general program as a distinct administrative unit with teachers or seniors, or both, as counselors; (2) program interwoven closely into the educational system but not a distinct administrative unit; (3) program in the hands of special officers such as personnel directors or deans of men; (4) program using upper class students, and (5) program as a part of freshman week.

Examples of the distinct counseling programs were found at the University of Minnesota, Colgate, Syracuse, Iowa State College, College of Engineering of the University of Michigan, the University of Pennsylvania, Rollins College, Princeton University, and the University of Chicago. A study was also made of the previous investigations of counseling such as those by Hopkins, Maxwell, Jones, Hawkes, and Bragdon. From these it was apparent that few measurements of the results of counseling in the colleges have been made.

THE MAIN EXPERIMENT

With the other counseling programs and the preliminary trial experiment as

[1] Reported by the author in the *Journal of Higher Education*, November, 1931.

a background, it was decided to carry on an experiment in personnel counseling for all freshmen below passing in scholarship at the end of the first eight weeks in 1930–31 and 1931–32. This included the 582 engineering students who were below passing in scholarship in 1930–31, and the 412 who were delinquent in 1931–32, making a total of 994 freshmen. The procedure involved the selection, training, and assignment of counselors, and the interviewing of the delinquent students. Both years the students delinquent in each school were divided into three equal groups by random sampling. The first group (I) was counseled by teachers selected from the faculty. The second group (II) was counseled by selected seniors, and the third group (III) remained uncounseled as a control group. Each counselor was assigned from 15 to 17 freshmen in 1930–31, and from 2 to 8 in 1931–32.

The faculty counselors were selected with the following qualifications in view: excellent personality, sincere interest in students and their development, high professional reputation, a knowledge of educational requirements, willingness to counsel, and ability to acquire the student point of view. The qualifications for the senior counselors were: high scholastic standing, good personality as indicated by personality ratings, good physical examination grade, high intelligence, test score, interest in students, knowledge of educational requirements, sufficient time to counsel, and a desire to learn how to counsel.

An instructional program of lectures by specialists in various fields such as How to Study, Interpretation of Intelligence Test Results, Health, Scholarship, Personality, and Use of Records, was provided for the counselors. Written *Instructions to Counselors* were distributed.

By the end of the first eight weeks of school when the delinquent reports were issued, each freshman's personnel record was completed. This consisted of personal data on the student's previous education, his vocational preference, health or physical examination, personality ratings, and intelligence test scores. These detailed personnel records, together with delinquent reports, were given to the delinquent freshmen's counselor.

With the aid of the instructional information and the personnel records, each counselor began his interviewing, preferably in the students' rooms. He then had them report back to him once a week or as often as was deemed necessary. The counseling continued until the end of each year, when the results were studied quantitatively and qualitatively.

The criteria used in evaluating the results were: points progress as measured quantitatively from first delinquency report to the scholarship report at the end of the first semester; delinquency progress—the difference between the amount delinquent the first semester and that of the second semester; personality progress—the difference in self-personality ratings before and after counseling.

The quantitative results were obtained by comparisons of the progress made by the different groups in the various criteria. Frequency distributions were made of the measures by groups, and the means of the groups

were compared. The probable errors, standard deviations, differences, and probable error of the differences, and the reliability of the differences were figured. Differences between two groups were considered completely reliable if the difference divided by the probable error of the difference was greater than four, i.e., one hundred chances in one hundred of there being a true difference.

The qualitative measurement was based on the viewpoints obtained from a questionnaire sent to each freshman and counselor.

Distributions of the psychological examinations scores, first amounts delinquent, health ratings, personality ratings by others, and first self personality ratings were made in order to determine the similarity of the groups before counseling. Group III, those not counseled, were slightly higher in psychological examination, health rating, and personality rating by others, and slightly lower in first amount delinquent and first self personality rating. Thus, Group III should have progressed slightly more under equal conditions than either Group I, those counseled by the faculty, or Group II, those counseled by the seniors.

In order to determine the relative progress made by the different groups during and after counseling, distributions were made of points progress, delinquency progress, scholastic progress, and personality progress. Table 1 gives the measures for the comparison of the groups in the different criteria for the combined two years of the counseling experiment.

The points progress, between first amount delinquent and first semester scholarship, by the groups were as follows: Group II, 1.53±.27; Group (I + II), 1.41±.18; Group I, 1.29± .27; and Group III, 0.85±.25. The greatest difference between any two groups was between Groups II and III where there are 89 chances in 100 of there being a true difference greater than zero. A similar situation exists between Groups (I + II) and III. The difference between Groups I and III is not as great, but there are 80 chances in 100 of a true difference between those groups as shown in table 1.

In delinquency progress, the difference between the amount delinquent the first semester and the second semester, the relative ranking of the groups was similar to that of points progress: Group II, 4.00±.32; Group (I + II), 3.28±.23; Group I, 2.67± .46; and Group III, 2.14±.30. The differences were: between Groups II and III, 1.86±.44 with a difference divided by the probable error of the difference of 4.23, or 100 chances in 100 of a true difference; between Groups I and II, 1.33±.47 with a difference divided by the probable error of the difference of 2.89, or 97 chances in 100 of a true difference; between Groups (I + II) and III, 1.14±.38 with a difference divided by the probable error of the difference of 3.00, or 98 chances in 100 of a true difference; and between Groups I and II, 82 chances in 100 of a true difference. This shows, statistically, a reliable difference between the delinquency progress made by those counseled by the seniors and those not counseled.

In 1–2 scholastic progress, the difference between the scholarship in-

dex at the end of the first semester and that at the end of the second semester, Groups II and III made the same progress and Group I made the least progress as shown in table 1. Thus, those counseled made the same or less progress in the second semester than those not counseled. Because during the first semester those counseled made more progress, it was neither necessary nor probable that they would make such advances the second semester; but it became necessary for those who were not counseled

TABLE 1

Differences in progress of counseled and uncounseled students

CRITERIA OF PROGRESS	NUMBER	MEAN ± P. E$_m$	S.D.	DIFFERENCE MEASURES			
				Groups	Difference ± P. E$_d$	Diff. / P. E$_d$	Chances in 100 of Diff.
1. Points Progress, 1930–31 + 1931–32:							
Group I	321	1.29±.24	6.36	I–II	0.24±.36	0.67	67
Group II	311	1.53±.27	7.17	I–III	0.44±.35	1.26	80
Group (I + II)	632	1.41±.18	6.69	II–III	0.68±.37	1.84	89
Group III	324	0.85±.25	6.60	(I + II)–III	0.56±.31	1.81	89
2. Delinquency Progress, 1930–31 + 1931–32:							
Group I	282	2.67±.46	8.17	I–II	1.33±.46	2.89	97
Group II	272	4.00±.32	7.73	I–III	0.53±.39	1.36	82
Group (I + II)	554	3.28±.23	8.08	II–III	1.86±.44	4.23	100
Group III	270	2.14±.30	7.28	(I + II)–III	1.14±.38	3.00	98
3. 1-2 Scholastic Progress, 1930–31 + 1931–32:							
Group I	272	0.07±.03	0.74	I–II	0.06±.04	1.50	84
Group II	267	0.13±.03	0.65	I–III	0.06±.04	1.50	84
Group (I + II)	539	0.10±.02	0.70	II–III	0.00±.04	0.00	50
Group III	270	0.13±.03	0.66	(I + II)–III	0.03±.04	0.75	69
4. 2-3 Scholastic Progress, 1930–31:							
Group I	106	−0.29±.05	0.73	I–II	0.06±.07	0.80	71
Group II	96	−0.35±.05	0.72	I–III	0.02±.07	0.33	58
Group (I + II)	202	−0.32±.03	0.73	II–III	0.08±.07	1.15	78
Group III	111	−0.27±.05	0.71	(I + II)–III	0.05±.06	0.83	72
5. Personality Progress, 1931–32:							
Group I	95	−1.34±.65	9.33	I–II	0.31±.85	0.03	51
Group II	106	−1.03±.54	8.32	I–III	1.68±.83	2.02	91
Group (I + II)	201	−1.20±.42	8.89	II–III	1.37±.74	1.85	89
Group III	105	0.34±.51	7.79	(I + II)–III	1.59±.66	2.57	97

to make more progress the second semester in order to remain in the University.

In 2–3 scholastic progress, Group III progressed the most, or rather did not retard as much, as the other groups, probably for the reason given above. This shows that counseled freshmen improve their scholarship more quickly than uncounseled students.

In personality progress, the difference between self-ratings before counseling and after counseling, the counseled groups retarded, whereas Group III advanced. Before counseling Group III was the highest, yet the difference is great enough to indicate a tendency for counseling to lower the student's self-opinion, possibly by giving him a true picture of himself.

In addition to the group calculations, the averages of points progress, delinquency progress, and 1–2 scholastic progress were figured for each section, i.e., the group of students assigned to each counselor. A summary of these means for 1930–31 is shown in table 2.

A comparison of the mean progress made by the various sections indicates that some seniors counseled more effectively than did some faculty counselors and vice versa; also that some sections in the control group progressed more than some in the counseled groups. From this it can be councluded that there is a decided need for the selection of counselors to be based upon actual measurement of progress made by the students, and for the retention of permanent counselors based upon the measured results. These comparions also show a tendency for students who make poor progress in the beginning to make a better progress as they continue, and vice versa.

In order to determine whether any quarter of a group made more progress in a given measure than any other quarter, distributions were made of points progress, delinquency progress and 1–2 scholastic progress by quarters of the groups in intelligence test scores, first amount delinquent, personality ratings by others, first self personality ratings, and health ratings. These data showed the following tendencies: the students in the middle two quarters of intelligence test scores progress the greatest amount; students who are the most delinquent before counseling make the most progress; counseled delinquent students who have the lowest opinion of themselves make the most progress; those not counseled, and who have the highest opinions of themselves, achieve the most at the beginning of their college careers; those counseled, and who had the highest opinions of themselves, progress the most as they continue in college, whereas the middle quarters of those not counseled progress the most; the counseling encourages students with an inferiority complex to quicker action than those not counseled; those with the best health achieve the most, at the beginning of their school careers, whereas, as they continue in college, those in the middle quarter achieve the most. In general those counseled show a tendency to progress more uniformly, according to the quarters of the various criteria, than those not counseled. Counseling tends to make a more normal distribution of students in the various criteria.

TABLE 2

Measures of points progress, delinquency progress, and 1–2 scholastic progress made by groups, schools, and sections (1930–31)

GROUP, SCHOOL, AND SECTION	POINTS PROGRESS		DELINQUENCY PROGRESS		1-2 SCHOLASTIC PROGRESS	
	N	Mean	N	Mean	N	Mean
Group I:						
Mechanical Engineering:						
Section A	16	5.00	16	1.75	15	−0.16
Section B	17	0.82	14	4.00	14	0.17
Section C	16	0.81	15	5.87	13	0.12
Section D	17	2.76	15	2.07	15	0.02
Section E	17	−0.18	15	1.73	14	0.23
M.E. Total	83	1.82	75	3.01	71	0.06
Electrical Engineering:						
Section A	14	1.64	12	3.25	12	0.08
Section B	14	3.86	11	4.36	10	0.16
Section C	15	−1.00	12	3.25	12	0.29
E.E. Total	43	1.44	35	4.57	34	0.17
Civil Engineering:						
Section A	16	1.87	13	4.77	13	0.41
Section B	18	2.89	16	−1.81	15	−0.13
C.E. Total	34	1.97	29	1.14	28	0.12
Chemical Engineering:						
Section A	14	1.64	12	1.50	12	−0.13
Section B	14	2.29	11	5.64	11	0.45
Ch.E Total	28	0.96	23	3.39	23	0.15
Group II:						
Mechanical Engineering:						
Section A	15	0.07	12	2.50	12	0.05
Section B	17	3.47	15	3.27	15	0.04
Section C	16	−1.81	12	0.75	12	0.43
Section D	15	3.40	12	8.50	12	0.20
Section E	17	0.82	17	5.82	17	0.40
M.E. Total	80	1.20	68	3.81	68	0.23
Electrical Engineering:						
Section A	14	0.29	12	2.33	12	0.26
Section B	15	1.27	12	4.58	12	0.20
Section C	13	1.85	10	5.70	10	0.30
E.E. Total	42	1.26	34	4.41	34	0.25
Civil Engineering:						
Section A	16	−1.19	14	−0.07	13	0.03
Section B	13	4.15	10	1.80	10	−0.20
C.E. Total	29	1.21	24	−1.87	23	−0.10
Chemical Engineering:						
Section A	15	1.47	13	5.31	13	0.08
Section B	13	4.15	12	1.25	10	0.18
Ch.E. Total	28	0.86	25	2.13	23	0.12

TABLE 2—*Concluded*

GROUP, SCHOOL, AND SECTION	POINTS PROGRESS		DELINQUENCY PROGRESS		1-2 SCHOLASTIC PROGRESS	
	N	Mean	N	Mean	N	Mean
Group III:						
Mechanical Engineering:						
Section A	17	1.35	14	1.50	15	0.27
Section B	18	1.39	17	2.29	17	0.24
Section C	18	0.72	16	2.06	16	0.25
Section D	14	1.64	14	4.50	14	0.22
Section E	16	1.50	14	−5.64	14	0.02
M.E. Total	83	1.30	75	1.32	76	0.20
Electrical Engineering:						
Section A	17	1.12	15	4.40	15	0.45
Section B	14	1.64	12	4.08	12	0.15
Section C	14	1.93	9	2.33	9	0.06
E.E. Total	45	1.53	36	3.53	36	0.25
Civil Engineering:						
Section A	16	1.31	12	5.50	12	−0.01
Section D	17	0.18	10	0.80	10	0.16
C.E. Total	33	0.73	22	3.36	22	0.06
Chemical Engineering:						
Section A	12	−2.08	9	4.78	9	0.47
Section B	13	0.15	11	−2.45	11	0.02
Ch.E. Total	25	−1.08	20	0.80	20	0.21

QUALITATIVE RESULTS

During the two years in which this experiment was carried on, 664 freshmen were counseled (330 formed the control group). In order to obtain a qualitative point of view from these freshmen, a questionnaire was sent to each. Four hundred and thirty, 65 per cent, replies were received. One hundred and sixty three, 78 per cent, of those counseled by the faculty said that the counseling was worth while, and one hundred and fifty students, 68 per cent, counseled by the seniors answered similarly, making a total of three hundred and thirteen students, 73 per cent, who said that the counseling service was worth while. Ninety-four per cent of the control group in 1931–32 said that they believed a counseling service would have been worth while.

One hundred and forty, 69 per cent, of those counseled by the faculty, and one hundred and twenty-four, 56 per cent, of those counseled by the seniors said that they were helped, making a total of 266, 62 per cent, who stated that they were helped by the counseling service. Students indicated, by checking a scale, the amount of help they had received. Those counseled by the faculty said that they were helped an average of $1.07 \pm .04$ points, and Group II, those counseled by the seniors, $0.82 \pm .03$. A completely reliable difference exists between these means. It will be remembered that in points progress and delinquency progress those counseled

by the seniors progressed more than those counseled by the faculty.

The methods by which students said their counselors helped them were: giving them encouragement and advice, and miscellaneous and specific information; teaching them how to study; explaining their educational responsibility; and showing interest in them and being friendly. (All reasons are listed in rank order according to the percentage of times given.) The reasons given by those who were not helped were: insufficient contact, no useful information given, no need for aid, uninterested counseler, and beyond help.

The students counseled by the faculty preferred faculty counselors and those counseled by seniors preferred senior counselors. In general senior counselors were preferred more than faculty counselors. Seniors were preferred as counselors because they have had experience more recent and similar to the freshmen's; seniors' problems are like freshmen's; seniors are more confidential; they have more time and are more friendly; and freshmen look up to seniors. The faculty counselors were preferred because they are more experienced, more competent and have more knowledge than seniors; they inspire more confidence and give better advice; they are more interested, and are in daily contact with the students.

The chief reasons which the freshmen gave for their delinquencies were: lack of application, lack of previous preparation, lack of knowledge of how to study, and inadequate time for study. Those not counseled tended to emphasize the reasons beyond their control.

The principal benefits of the counseling from the viewpoint of the freshmen counseled were that: They received encouragement, advice, and assistance on specific work; they were adjusted to the new environment; they learned how to study; and received friendship.

The objections which were given to the counseling service were: lack of really valuable information given; lack of seriousness on the part of the counselors and freshmen; insufficient contact; and disturbance of the student's individual initiative.

A questionnaire was also given to each of the ninety-one counselors who participated both years in this experiment. Eighty-four, 92 per cent, of the total number replied. Twenty-four, 85 per cent, of the faculty counselors indicated that the counseling service was worth while. Thirty-five, 62 per cent, of the senior counselors said that the counseling service was worth while; making a total of fifty-nine, 70 per cent of all the counselors, who said that the counseling service was worth while.

To the question "Have the efforts which you have expended in time and endeavor been worth while from your personal point of view?", sixty-four per cent of the counselors said that it was. Seventy-five per cent of the counselors said that the counseling service should be continued. The senior counselors spent more time on counseling than did the faculty counselors. A majority of counselors felt that the senior counselors were more effective than faculty counselors. All counselors helped more students than they believed they did.

The counselors' chief objections to or doubts about the counseling were:

that the poorer freshmen are not worth saving; that students co-operate too little; and that too much of the counselor's time is consumed. The difficulties encountered were in making appointments, interference with professional work, and lack of freshmen co-operation. The chief benefits which they claim for the service were the personal attention given to the freshmen, encouragement of the student, the personal benefits received by the counselors, the promotion of teacher-student relationships, and the teaching to the student of the responsibility of a college education.

The counselors said they helped their students by giving encouragement and self-confidence, by teaching the students how to study, by improving their attitudes, by being friendly, by increasing their interest in their work, by pointing out errors, and by emphasizing responsibility. The counselors gained contact with their freshmen principally by telephone, and by visiting the freshmen in their rooms. They gave the following main reasons for freshmen delinquencies: poor methods of study, lack of previous preparation, lack of interest and initiative, and lack of application.

The main suggestions for improvement of the counseling service were better counselor training, voluntary counseling service, and a smaller number of students assigned to each counselor.

GENERAL CONCLUSIONS

The following general conclusions are drawn from the results of this experiment:

1. Personnel counseling by seniors can significantly decrease the delinquency of students who are below passing in scholarship.

2. Personnel counseling by faculty counselors improves, though not with complete statistical significance, the scholarship of students below passing.

3. Counselors differ in ability to counsel students and to improve the scholarship of those students below passing.

4. Counseling produces a more normal distribution of students in personnel factors. Scholastically delinquent students in the middle quarters in intelligence test scores progress more than any others. Students who are most delinquent progress the most.

5. Of all delinquent students who improve scholastically, those who receive counseling improve most rapidly.

6. Counseling is worth while, according to the opinions of those counseled. The freshmen who were not counseled also considered that it would be worth while.

7. According to questionnaire replies, faculty counseling is more worthwhile than senior counseling, and faculty counselors are more preferred than senior counselors.

8. The chief reasons freshmen give for their delinquencies are: lack of application, lack of previous preparation, and lack of knowledge of how to study.

9. The counselors judge that the counseling service is worth while, and should be continued.

The Transition from Day to Night Lighting

By C. E. Ferree and Gertrude Rand, *Research Laboratory of Physiological Optics, Wilmer Ophthalmological Institute, Johns Hopkins Medical School*

The careful researches of Drs. Ferree and Rand effectually dispose of the belief that a mixture of daylight and artificial light is injurious. Practical suggestions are offered for taking care of the transition to artificial light as daylight fades.

In order to test the current belief that the mixture of daylight and artificial light, as in late afternoon illumination, is undesirable, the following experiments were conducted. (1) A comparison was made of the effect of artificial light, daylight and mixtures of artificial light with daylight, on acuity, speed of vision, power to sustain acuity, and ocular fatigue. In each case the intensity of illumination was made the same and the eye was fully adapted to the illumination used. The object of these experiments was to ascertain whether there is anything detrimental to the eye in the mixture of artificial light and daylight so far as color and composition are concerned. (2) In a second series of experiments the artificial light was turned on at different times in the late hours of the afternoon on different days and the effect on speed of vision was determined. In these experiments the tests were made at different intervals of fifteen minutes, beginning early or in the middle of the afternoon and continuing until after darkness was complete. These results give a history of the eye's performance under the changing intensities of afternoon light until the artificial light was added, the immediate effect of adding that light, and the effect from then on until a constant state of performance was reached. An opportunity is thus had to see directly the effect of adding the artificial light on the powers of an eye that has been subjected to the actual conditions under which our eyes are placed in a working day that lasts until or after nightfall. (3) In a third series of experiments, a brief study of the problem was made in relation to the adaptation of the eye. The object of this study was to show to what extent the eye is rendered deficient in the late hours of the afternoon by its previous exposure to a light of high intensity and by its failure to keep pace by adaptation with the change of intensity.

It was found that the mixture of daylight and artificial light is not in itself undesirable. In fact, it is slightly superior to artificial light alone. The source of the popular misconception probably lies in the fact that a greater total intensity of light is needed during late afternoon hours (when the two kinds of light are usually mixed) due to the slow adaptation of the eye following brilliant illumination of mid-day. In other words, the deficiency is primarily in the eye, not in the mixture of the two lights, and would hold for any kind of illumination. Ways are suggested in which the change from day to night lighting can be made less abrupt and less objectionable.

THERE has long been a belief among those who have to face lighting problems in a practical way that the mixture of artificial light and daylight is not desirable. One prominent lighting engineer writes that in making a satisfactory installation to be used as a supplement to daylight, invariably more light has to be planned for than is required in an inside room in which artificial light alone is used. In other cases it has been a question of serious debate whether it is not better and perhaps more economical that daylight be excluded entirely in the late hours of the afternoon and artificial light alone be used. In still other cases photometric measurements of mixtures of artificial light and daylight have been discredited as not having their accustomed meaning, because of the belief that these mixtures create a visual anomoly. If space would permit, many other instances of a similar character could be cited. The question has long been under discussion in the lighting of schoolrooms, offices, factories, etc.

When a belief has persisted so long in spite of obvious difficulties of acceptance and explanation, it is usually not safe to assume that it is entirely without justifiable cause or foundation. Very often, however, the true cause is found not to be the one popularly assigned. From the standpoint of the composition of the light, it seems incredible that there could be anything especially deleterious to the eye in the mixture of daylight and artificial light. The natural assumption would be that the mixture would be poorer than daylight and better than artificial light. Very few, even of those who hold to the belief that the mixture is deleterious, would rate an illuminant that gives a light intermediate in composition and color between daylight and Mazda light as less desirable than Mazda light; nor could they reasonably hold that it should make any difference so long as the same composition is obtained, whether the light waves are mixed in the process of emission or after emission has taken place.

Four types of reason might perhaps be assigned for the belief. (1) The mixture is itself deleterious. (2) The method of making the mixture is at fault; that is, artificial light usually comes from more or less concentrated overhead sources and the daylight from windows or side sources of large area. (3) The trouble is not with the light or the type of installation, but with the state of sensitivity of the eye. For example, during the greater part of the day the eye is desensitized by a high intensity of illumination which reaches a peak around midday. As the light fails through the afternoon, the eye's gain in sensitivity by adaptation, if full efficiency for each intensity of light is to be attained, must keep pace with the loss of light. During the middle and late hours of the afternoon, daylight fails more rapidly than the eye adapts; hence, a higher total of light is needed in the late afternoon to give satisfactory seeing than if the eye had not had the hours of pre-exposure to the higher daylight intensities. From this point of view it can be readily understood why it should be found that in case of an installation that is to be used as a supplement to daylight, a higher total intensity has to be planned for than is needed in

an installation for an inside room. (4) The belief is based on superficial impressions of various kinds. (a) A sudden change either in intensity or color of light is apt to be unpleasant. (b) Artificial light is colored light. Colored light, depending upon its hue and saturation, is strong in its subjective effect. For this reason a superficial comparison of colored and colorless light usually results in an overestimation of the amount of the colored light. There is a tendency, therefore, to overestimate artificial light as compared with daylight or a mixture of artificial light and daylight. Unevenness of distribution, unevenness of surface brightness and poor diffusion also frequently lead to the overestimation of artificial light. (c) A low indoor daylight illumination, even when supplemented by a considerable amount of artificial light, seems insufficient when contrasted with the more brightly illuminated exterior seen through the windows. An equally low indoor artificial illumination seems sufficiently intense when contrasted with the darkness of a night exterior.

In order to test the first two of these reasons, the following investigation has been conducted. Artificial light and daylight were mixed in equal proportions at different levels of intensity and a comparison was made of the effect on the eye of these mixtures with that of daylight and of artificial light of the same photometric intensities. Two types of installation were used. In the first the artificial light, the daylight and mixture of the two, all came from the same light-well and all were passed through a diffusion sash of ground glass swung beneath. The distribution effects for the three kinds of light were thus as nearly the same as was possible. In the second the daylight and the artificial light were obtained from the light-well, and the mixed light was formed from the artificial light coming from the light-well and daylight from side windows. This conformed roughly to the conditions assigned in the second of the reasons mentioned above and gave a closer approximation to the illumination effects under which the mixture is ordinarily used.

In a second series of experiments the artificial light was turned on at different times in the late hours of the afternoon on different days, and the effect on the speed of vision was determined. In these experiments the speed of vision was obtained at intervals of 15 minutes, beginning early or in the middle of the afternoon and continuing until after darkness was complete. The series was so arranged that the speed was obtained immediately before and after the artificial light was added, the tests then being continued under the mixture of the two lights through the period of vanishing daylight and long enough under the artificial light alone for the eye to become completely adapted to that light, as was shown by the absence of further change in the result. These results give a history of the eye's performance under the changing intensities of afternoon light until the artificial light was turned on, the immediate effect of adding that light, and the effect from then on until a constant state of performance was reached. An opportunity is thus afforded to see directly the effect of

adding the artificial light on the powers of an eye that has been subjected to the actual conditions under which our eyes are placed in the course of a working day which lasts until or after nightfall. It is interesting to note that in each case the speed of vision was increased by the addition of the artificial light to nearly the same value as would be expected for daylight if it were of the same intensity as the mixture produced by adding the artificial light; but it is not equal to the performance given when, as was later tried, the eye was completely adapted to that same amount and proportion of mixture of artificial light and daylight. Quite aside from its bearing on the problem of mixing artificial light with daylight, the results are also interesting with regard to the information they give as to the eye's powers of performance at different times under the changing afternoon illumination, and the opportunity that is afforded thereby for comparing these powers of performance with hourly records of production during the afternoon hour for the same season of the year.

In a third series of experiments a brief study of the problem was made in relation to the adaptation of the eye. The object of this study was to show to what extent the eye is rendered deficient in the late hours of the afternoon by its previous exposure to a light of high intensity and by its failure to keep pace by adaptation with the change of intensity. Two sets of experiments were conducted. In the first set, a determination was made of the eye's deficiency in speed at the time the artificial light was added, due to the adaptation situation just noted. That is, the speed was obtained with the eye fully adapted to a mixture of artificial light and daylight of the same intensity and proportions as were used in the afternoon series, and the difference taken between this speed and that obtained in the afternoon series. As a supplement to these results, it was also determined what intensity a mixed light of these proportions must have in order to give the speed obtained in the afternoon series when the eye is fully adapted to the illumination employed. The result obtained may be considered the effective value of the illuminaton used in the afternoon series for the state of adaptation prevailing at that time, and indicates roughly the intensity of illumination that would be needed to give equally good results in an inside room. In the second set of experiments, the transition from early afternoon light to artificial light was made abruptly. The intention here was to get some estimate of the total effect of the preëxposure of the eye to the higher intensities of daylight on its subsequent powers of performance at the lower levels of intensity used in artificial lighting. In these experiments the eye was exposed for one hour to the daylight intensity and the speed of vision determined. The daylight was then entirely excluded from the room and the artificial light turned on. Speed tests were made immediately and at intervals of five minutes until complete readaptation had occurred. The difference in speed at the beginning and at the end of the period under the artificial light shows the full effect of the daylight pre-exposure. As a supplement to these results, with the eye fully adapted to the artificial light,

determinations were made of the intensity of light necessary to give each of the speeds obtained while the eye was progressively adapting. As before, each of these values might be roughly designated as the effective value of the illumination employed for that particular state of adaptation; and the difference between it and the illumination actually used, the illumination equivalent of the eye's loss of speed for the particular condition in question.

A COMPARISON OF THE EFFECT OF ARTIFICIAL LIGHT, DAYLIGHT, AND MIXTURES OF ARTIFICIAL LIGHT AND DAYLIGHT ON ACUITY, SPEED OF VISION, POWER TO SUSTAIN ACUITY, AND OCULAR FATIGUE

The experiments were conducted in an optics room fitted especially for the purpose. This room was 16 ft. long, 13 ft. wide and 12 ft. high. The walls were painted a matt white and the floor a matt light gray. The room was provided with two windows on one side, 3 x 6 ft., and a skylight 12 x 9 ft. Beneath the skylight was a light-well 8 ft. deep at one end and 5 ft. at the other. The walls of this light-well were painted matt white. Beneath the light-well were swung two diffusion sashes of ground glass, each 12 x 4.5 ft. All of the light entering the room from the light-well passed through these sashes. To provide for the ventilation of the room, the sashes were dropped 11 in. below the opening of the light-well.

For the artificial light 8 X-Ray reflectors[1] (No. 610 Jupiter) were used, equally spaced, 6 ft. above the diffusion sashes. They were attached by adjustable mounts to an iron pipe supported on 9-in. brackets extending out from the back wall of the light-well. The design of the reflectors, the height above the diffusion sashes, and the adjustable mounts permitted of a comparatively even spray of light over the diffusion sashes. The effect was that of a room uniformly illuminated with a soft diffused light with very little unevenness of surface brightness.

In order to provide for the control and variation of the amount of daylight entering the light-well, two sets of curtains were installed directly beneath the skylight, one set consisting of four overlapping light-proof curtains on provide for the gross changes, the other of three thin, white curtains to give the finer changes often needed in maintaining constancy of illumination. Beneath the diffusion sashes were installed three sets of curtains, one broad light-proof curtain, the edges of which were enclosed to a depth of several inches in a light-tight boxing, covering the entire ceiling of the room; and two sets of thin white curtains, one running lengthwise of the room and the other crosswise. These latter curtains could be used for the control and variation of daylight, artificial light, or the mixture of the two. In order to vary the amount of artificial light incident on the diffusion sashes, each of the eight units was installed on a separate circuit with voltmeter and rheostat control and provided with a separate switch. By means of all of the controls, any amount of daylight or artificial light, or the mixture of the two in any pro-

[1] Donated for use in these experiments by Curtis Lighting, Inc., Chicago, Illinois.

adding the artificial light on the powers of an eye that has been subjected to the actual conditions under which our eyes are placed in the course of a working day which lasts until or after nightfall. It is interesting to note that in each case the speed of vision was increased by the addition of the artificial light to nearly the same value as would be expected for daylight if it were of the same intensity as the mixture produced by adding the artificial light; but it is not equal to the performance given when, as was later tried, the eye was completely adapted to that same amount and proportion of mixture of artificial light and daylight. Quite aside from its bearing on the problem of mixing artificial light with daylight, the results are also interesting with regard to the information they give as to the eye's powers of performance at different times under the changing afternoon illumination, and the opportunity that is afforded thereby for comparing these powers of performance with hourly records of production during the afternoon hour for the same season of the year.

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[1] Donated for use in these experiments by Curtis Lighting, Inc., Chicago, Illinois.

portion desired, could readily be varied from full intensity to extinction, and constancy of illumination could be maintained within a negligible limit of error. The windows also were provided with light-proof curtains. Each of the light-proof curtains, overhead and window, was painted matt white on the inside. When the daylight to be mixed with the artificial light was obtained from the light-well, the curtains over the windows were drawn; and when obtained from the windows, daylight was excluded from the light-well by drawing the curtains under the skylight. By means of these two sets of curtains, window-light or skylight could be mixed with the artificial light as desired.

The tests for the effect on the eye were conducted at four intensities. For the first three of these intensities 100-watt frosted type B Mazda lamps were used. The light from the type B rather than the type C lamp was preferred for these experiments because of its greater difference from daylight in color and composition. However, since the fourth intensity could not be obtained with the type B lamp, bowl-enameled 200-watt type C lamps were used. One intensity was selected for use with all of the tests cited above: acuity, speed of vision, power to sustain acuity and ocular fatigue. These tests have been described so frequently in former papers[2] that it does not seem necessary to take the space for their description here. In making the tests the artificial light and the daylight were both taken from the light-well and were mixed in equal proportions. The artificial light, the daylight and the mixture were all made equal in every case at the test surface. In making the equalization of the components of daylight and artificial light for the mixture, the measurements were also made at the test surface.

The results for these tests are given in table 1. The order of ranking as to merit was the same, it will be noted, for the four tests. The artificial light gave the poorest results, the daylight the best results, and the mixture of the two in equal proportions an intermediate result. Because of the agreement in ranking for the four tests and the excessive amount of time required

[2] Ferree, C. E., and Rand, G. The effect of variations in intensity of illumination on functions of importance to the working eye. *Trans. Illum. Eng. Soc.*, 1920, *15*, 769–792; The effect of variations in intensity of illumination on acuity, speed of accommodation and other important eye functions. *Trans. Amer. Ophthal. Soc.*, 1921, *19*, 259–294; The effect of variation of visual angle, intensity and composition of light on important ocular functions. *Trans. Illum. Eng. Soc.*, 1922, *17*, 69–86; The effect of increase of intensity of illumination on acuity and the question of the intensity of illumination of test charts. *Amer. Jour. Ophthal.*, 1923, *6*, 672–675; Further studies on the effect of composition of light on important ocular functions. *Trans. Illum. Eng. Soc.*, 1924, *19*, 424–447; Intensity of light and speed of vision. I. Effect of size of object and difference of coefficient of reflection as between object and background. *J. Exper. Psychol.*, 1929, *12*, 363–391; Intensity of light and speed of vision. II. Comparative effects for dark objects on light backgrounds and light objects on dark backgrounds. *J. Exper. Psychol.*, 1930, *13*, 388–422; Visibility of objects as affected by color and composition of light. Part I, *Personnel Journal*, 1931, *9*, 475–492; Part II, *ibid.*, 1931, *9*, 108–124.

to make all four of them, particularly the fatigue test, for all four intensities, the speed test alone was used for the remaining intensities. In all cases, as

TABLE 1

Comparative effect of equal intensities of daylight, artificial light, and a mixture of the two in equal proportions on acuity, speed of vision, power to sustain acuity, and ocular fatigue; light in all cases from overhead sources

A. Acuity

INTENSITY		TYPE OF LIGHTING	ACUITY	PER CENT CHANGE AS COMPARED WITH DAYLIGHT
Horizontal component	Vertical component			
ft. c.	*ft. c.*			
2.3	4.2	Daylight	1.352	
2.3	4.6	Mixed light	1.336	1.2
2.3	5.0	Artificial light	1.324	2.1

B. Speed of vision

INTENSITY		TYPE OF LIGHTING	SPEED OF VISION	PER CENT CHANGE AS COMPARED WITH DAYLIGHT
Horizontal component	Vertical component			
ft. c.	*ft. c.*			
2.3	4.2	Daylight	11.90	
2.3	4.6	Mixed light	11.49	3.5
2.3	5.0	Artificial light	11.17	6.1

C. Power to sustain acuity

INTENSITY		TYPE OF LIGHTING	RATIO TIME CLEAR TO TIME BLURRED	PER CENT CHANGE AS COMPARED WITH DAYLIGHT
Horizontal component	Vertical component			
ft. c.	*ft. c.*			
2.3	4.2	Daylight	7.57	
2.3	4.6	Mixed light	6.20	18
2.3	5.0	Artificial light	5.0	34

D. Ocular fatigue

INTENSITY		TYPE OF LIGHTING	TIME OF TEST	RATIO TIME CLEAR TO TIME BLURRED REDUCED TO COMMON STANDARD	PER CENT LOSS IN EFFICIENCY	PER CENT CHANGE AS COMPARED WITH DAYLIGHT
Horizontal component	Vertical component					
ft. c.	*ft. c.*					
2.3	4.2	Daylight	10 a.m.	3.50	2.3	
			1 p.m.	3.42		
2.3	4.6	Mixed light	10 a.m.	3.50	6.3	4.1
			1 p.m.	3.28		
2.3	5.0	Artificial light	10 a.m.	3.50	8.0	5.9
			1 p.m.	3.22		

before, the equalization was made at the test surface. The results for these tests are given in table 2. Again it will be noted, for all intensities, that the artificial light gave the poorest results, the daylight the best, and the mixture in equal proportions an intermediate result. Table 3 gives the results when the daylight used in the mixture was obtained from the side windows. For this case the tests were made only for closely those obtained when the daylight for the mixture was taken from the light-well, that it did not seem necessary to extend the work to include the two more difficult and time-consuming tests. Check observers were used in the verification of the results. Some difference was obtained in the amount of effect for the different observers, but the order of ranking as to merit was in every case the same,

TABLE 2

Comparative effect of daylight, artificial light and a mixture of the two in equal proportions on the speed of vision at four intensities; light from overhead sources

INTENSITY		TYPE OF LIGHTING	SPEED OF VISION	PER CENT CHANGE AS COMPARED WITH DAYLIGHT
Horizontal component	Vertical component			
ft. c.	*ft. c.*			
6.70	12.06	Daylight	17.70	
6.70	13.30	Mixed light	17.12	3.3
6.70	14.54	Artificial light	16.67	5.8
2.30	4.2	Daylight	11.90	
2.30	4.6	Mixed light	11.49	3.5
2.30	5.0	Artificial light	11.17	6.1
1.15	2.1	Daylight	7.52	
1.15	2.3	Mixed light	7.246	3.6
1.15	2.5	Artificial light	7.06	6.1
0.575	1.05	Daylight	3.79	
0.575	1.15	Mixed light	3.65	3.7
0.575	1.25	Artificial light	3.55	6.3

acuity at one intensity and for speed at the four intensities. The tests were not made for power to sustain acuity and for ocular fatigue for two reasons: (a) It was very difficult, with our provisions for the control of the window-light, to maintain the high degree of constancy that is required in the 3-minute record used in both of these tests. And (b) the results for the acuity and speed tests duplicated so that is, the mixture was slightly better than the artificial light alone, and slightly poorer than the daylight alone. While the claim to superiority for the mixed light as compared with the artificial light is slight in all cases, the results do surely indicate that there is nothing deleterious, so far as the more important visual functions are concerned, in the mixture of daylight and artificial light from the standpoint of

color and composition or the difference in the location and type of source used to supply the components for the mixture.

It would appear, therefore, that we must look elsewhere for an explanation of the belief that as good a result is not obtained as might be expected when artificial light is used to supplement daylight at the close of the working day. When an apparent disagreement of result is obtained between laboratory work and field work, obviously the first thing to do is to look for a disagreement in conditions. In the present case the disagreement in conditions is obvious. In our experiments each test was made with the eye completely adapted to each illumination employed. The experiments were planned with this end in view in order that the effect of color and composition of light and difference in location and type of source might be determined in

TABLE 3

Comparative effect on daylight and artificial light from overhead sources, and a mixture in equal proportions of artificial light from an overhead source with daylight from side windows, on acuity and speed of vision

A. Acuity

INTENSITY		TYPE OF LIGHTING	ACUITY	PER CENT CHANGE AS COMPARED WITH DAYLIGHT
Horizontal component	Vertical component			
ft. c.	*ft. c.*			
2.3	4.2	Daylight	1.352	
2.3	4.6	Mixed light	1.336	1.2
2.3	5.0	Artificial light	1.324	2.1

B. Speed of vision

INTENSITY		TYPE OF LIGHTING	SPEED OF VISION	PER CENT CHANGE AS COMPARED WITH DAYLIGHT
Horizontal component	Vertical component			
ft. c.	*ft. c.*			
6.70	12.06	Daylight	17.70	
6.70	13.30	Mixed light	17.12	3.3
6.70	14.54	Artificial light	16.67	5.8
2.30	4.2	Daylight	11.90	
2.30	4.6	Mixed light	11.49	3.5
2.30	5.0	Artificial light	11.17	6.1
1.15	2.1	Daylight	7.52	
1.15	2.3	Mixed light	7.246	3.6
1.15	2.5	Artificial light	7.06	6.1
0.575	1.05	Daylight	3.79	
0.575	1.15	Mixed light	3.65	3.7
0.575	1.25	Artificial light	3.55	6.3

separation. In field work the results have been obtained when daylight is mixed with artificial light after hours of exposure of the eye to high daylight intensities. In the following series of experiments we have attempted, therefore, to duplicate as closely as possible the conditions which are found in the practical situation. In these experiments the test for speed alone was used. Two reasons may be assigned for this: (a) the conditions were such that it was obviously impossible to use the test for fatigue and power to sustain acuity; (b) the acuity test is less sensitive than the speed test and has not as yet been found to add anything differential in the way of results to those obtained with the speed test.

THE EFFECT ON SPEED OF VISION OF ADDING ARTIFICIAL LIGHT TO DAYLIGHT IN THE LATE HOURS OF THE AFTERNOON

These experiments were conducted in the same room as the work in the preceding section. The observer entered the room in the early afternoon. Tests were taken at intervals of 15 minutes as the light decreased. When the illumination had reached the intensity chosen, the artificial light was turned on, tests being made immediately before and after the artificial light was added. The tests were then continued at intervals of 10 minutes until well after the daylight had disappeared from the room.

The tests were made with the rotary tachistoscope described in former papers. Because of the rapidly changing illumination, it was necessary to shorten the time consumed in making the determination of speed. For this reason the time needed to discriminate the opening of the circle was measured for five instead of eight positions, as has been the case in all our former work on speed of vision. A correct judgment was required in three of the five positions. Also, because of the nature of the series, it was not possible to narrow down the determination of the threshold of speed as carefully and minutely as has been done heretofore. Then too, in order that as little time as possible should be consumed in making the illumination measurements, the horizontal component alone was read while the series was in progress. The ratio of the vertical to the horizontal component with the type of distribution found in our optics room was determined in a number of separate series of measurements extending through the afternoon hours. As might be supposed, with an optics room illuminated by a light-well with a diffusion sash swung beneath, this ratio was found to have approximately a constant value for each type of illumination. The horizontal component of illumination at the test surface was measured at the beginning and end of each series of exposures contributing to one determination of speed. An average of these values was taken as the intensity of illumination at which the test was made. The vertical component was computed from the horizontal component by applying the ratio previously determined. On the front surface of the exposure disc, in line with the test object and the observer's eye, was placed a fixation cross in order that the exposure might begin with the eye as closely as possible in adjustment for

the test object. Constancy of position of the eye was secured by having the observer bite a mouthboard in which the impression of his teeth had previously been made and hardened in wax.

A graphic representation of the results is given in the form of curves shown in figures 1 and 2. In these curves speed of vision is plotted on the vertical coördinate and time of day on the horizontal coördinate. Both components of illumination are also shown on the horizontal coördinate. Speed, however, is not plotted against intensity of illumination. This should be kept clearly in mind when inspecting the shape of the curves. While as the afternoon advances the tendency is in general towards a lower illumination, this is not always a smooth progression, as is well known to everyone who is familiar with daylight measurements. It frequently happens, for example, that a higher intensity of illumination is found at a later than at an earlier period, due to some obscuration of light at the earlier period, particularly in the early and mid-afternoon hours. In fact, several factors contribute to the shape of the curves obtained: rate and direction of change of daylight from test to test during the afternoon in question, rate of adaptation of the eye to the changing light, rate of change in size of pupil, the intensity of daylight at the time the artificial light was added and the proportion between the two components, etc. Because of all these factors, the curves present quite a different appearance from other curves which we have determined for the relation of speed of vision to intensity of light for intensities ranging from 0.5 to 116 f. c., in which case the eye was allowed thoroughly to adapt to each intensity of illumination and ample opportunity was had for carefully determining and rechecking the determinations of the speed for each intensity. In the case of the present curves the determinations had to be made as quickly as possible, and the exact conditions obtaining for any curve could not be duplicated for the purpose of repeating and checking the determination. The curves can thus be considered only as representing the general trend of the function investigated under the conditions imposed. They should by no means be confused with curves intended to show the relation between intensity of light and speed of vision.

In figure 1 the tests were begun at 3:15 p.m. on March 25th and repeated at intervals of 15 minutes until 6:10 p.m. At this time the daylight had decreased to 1 ft. c. horizontal component, 1.8. ft. c. vertical component, and comfortable reading from ordinary print was barely possible. The speed at this intensity, represented by the reciprocal of the exposure time in seconds needed to discriminate the test object, was 5.5. Artificial light was then added, horizontal component 2.18 ft. c., vertical, 4.8 ft. c. The total mixed illumination at the time the test was taken was 2.40 ft. c. horizontal component, 5.2 vertical component. This increased the speed of vision from 5.5 to 11.49, or 109 per cent. The series was then continued until 7:00 p.m., 30 minutes after daylight had completely disappeared and the eye had reached a permanent state of sensitivity to the intensity of arti-

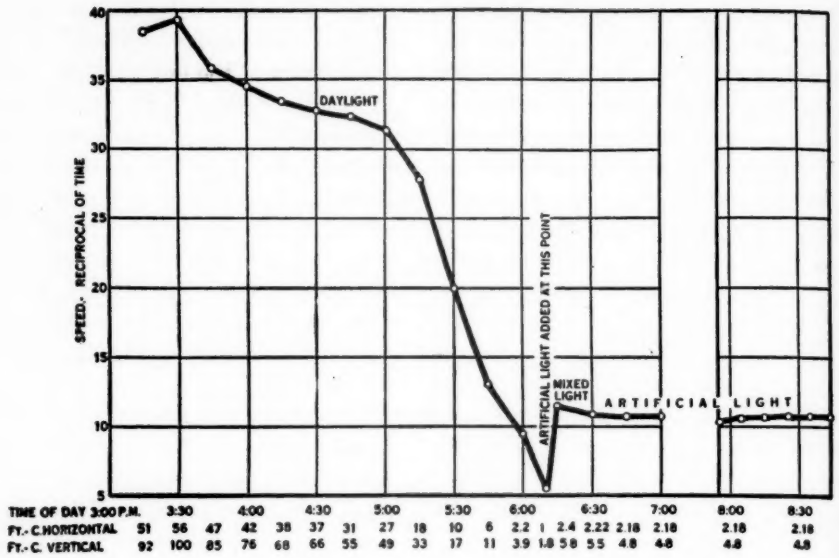

SPEED.- RECIPROCAL OF TIME
DAYLIGHT
ARTIFICIAL LIGHT ADDED AT THIS POINT
MIXED LIGHT
ARTIFICIAL LIGHT
TIME OF DAY 3:00 P.M. 3:30 4:00 4:30 5:00 5:30 6:00 6:30 7:00 8:00 8:30
FT.-C. HORIZONTAL 51 56 47 42 38 37 31 27 18 10 6 2.2 1 2.4 2.22 2.18 2.18 2.18 2.18
FT.-C. VERTICAL 92 100 85 76 68 66 55 49 33 17 11 3.9 1.8 5.8 5.5 4.8 4.8 4.8 4.8

FIG. 1. THE EFFECT ON SPEED OF VISION OF ADDING ARTIFICIAL LIGHT TO DAYLIGHT IN THE LATE HOURS OF THE AFTERNOON
Record taken March 25

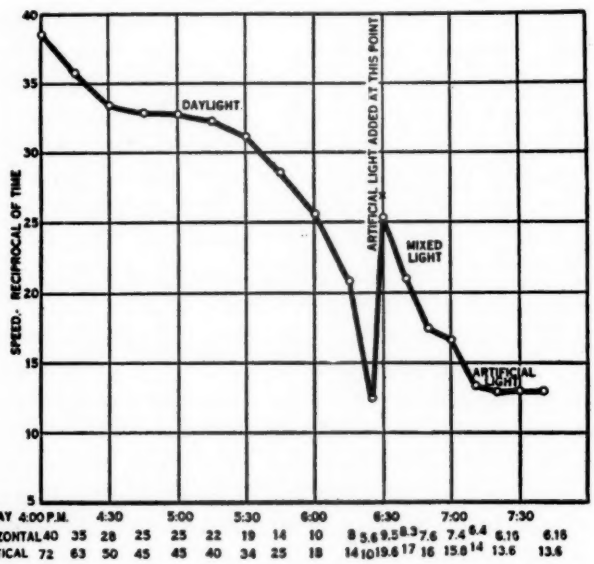

SPEED.- RECIPROCAL OF TIME
DAYLIGHT
ARTIFICIAL LIGHT ADDED AT THIS POINT
MIXED LIGHT
ARTIFICIAL LIGHT
TIME OF DAY 4:00 P.M. 4:30 5:00 5:30 6:00 6:30 7:00 7:30
FT.-C. HORIZONTAL 40 35 28 25 25 22 19 14 10 8 5.6 9.5 8.3 7.6 7.4 6.4 6.15 6.15
FT.-C. VERTICAL 72 63 50 45 45 40 34 25 18 14 10 19.6 17 16 15.8 14 13.6 13.6

FIG. 2. THE EFFECT ON SPEED OF VISION OF ADDING ARTIFICIAL LIGHT TO DAYLIGHT IN THE LATE HOURS OF THE AFTERNOON

Record taken May 7. *X* indicates the speed obtained in a later determination when the eye was fully adapted to the mixed light.

ficial light. When the daylight had completely disappeared, the speed had decreased to 10.75, a change of 6.4 per cent. After dinner the tests under the artificial light were resumed from 7:55 until 9:00 p.m. to show the effect of coming from outdoor darkness into a room lighted by 2.18 ft. c., horizontal component, 4.8 ft. c. vertical component, or artificial light. At the beginning of this period the speed was 10.31; at the close 10.75; a gain of 4.3 per cent.

The curve shown in figure 2 illustrates the effect of adding artificial light when the addition was made to higher intensities of daylight. The tests were begun at 4 p.m. and continued at intervals of 15 minutes until 6:25 p.m., at which time the intensity of the daylight was 5.6 ft. c. horizontal, 10.1 ft. c. vertical component. Artificial light was then added of an intensity of 6.16 ft. c. horizontal component, 13.6 ft. c. vertical component. The effect was to increase the speed from 12.5 to 25.32, or 102 per cent. As the daylight decreased the speed decreased to 12.90, a change of 49 per cent.

The question has frequently been raised whether it is not better for the eye to exclude the daylight entirely when it has become insufficient for seeing and to depend upon artificial light alone. The results shown in these three curves and of all the other tests we have made are quite definite on this point, so far as the effect on speed of vision is concerned. The speed is greater for the mixture than for the artificial light alone. When the artificial light is added, the increase in speed seems roughly to be all that could be expected from the increase of intensity produced and the state of adaptation of the eye, and as the daylight dies away the decrease appears also to follow roughly the decrease of intensity. Unless some antipathy should be felt to the fluctuation in the eye's adjustments to intensity produced by the abrupt addition of the artificial light and the subsequent dying away of the daylight, we can see no serious ocular objection to utilizing the daylight as long as it lasts in the form of a mixture with the artificial light, even when the transition from the one to the other is abrupt. The intensity curve could be made smoother, of course, by substituting the artificial light when the two are at or near the same intensity. If this were done, however, the disagreeable effect of a more abrupt color change would be experienced and the benefit to speed and other working powers of the eye during the period of increased intensity would be lost. Also, a valuable and useful amount of daylight would be wasted. Suggestions are offered in the next section which are more satisfactory; at least one of these is also more feasible.

A STUDY OF THE PROBLEM IN RELATION TO THE ADAPTATION OF THE EYE

It has been shown in the previous sections that there is nothing detrimental to the eye in the mixture of artificial light with daylight so far as composition and color are concerned. The effect on the more important visual functions is roughly what would be expected from an illumination ranging in color and composition between daylight and artificial light. Also,

no measurable difference in result was found when both components of the mixture were obtained from an overhead source, and when one was obtained from an overhead and the other from side sources. A greater total intensity of light during the late afternoon hours is needed, however, to give a satisfactory efficiency to the eye, than is required at night or during the day in an inside room. This, we believe, is because of the high intensities to which the eye has been exposed during the day and the rapid rate of decrease of light in the middle and late hours of the afternoon; that is, in its recovery of sensitivity, the eye is not able to keep pace with the failing illumination. Until it has had an opportunity to recover its sensitivity, more than the normal amount of light is needed. Thus the deficiency is primarily in the eye itself, due to the adaptation situation imposed, not in the mixture of the two kinds of light. The amount of the deficiency will in any case obviously depend upon the eye's state of adaptation at the time the artificial light is added. In general, it would be supposed that better results would be obtained by turning on the artificial light before the daylight has reached its more rapid stage of rate of decline, because that is when the eye would be expected to experience its greatest lag in adaptation. It should be the purpose of good afternoon lighting to minimize that lag as much as possible. Also, by turning on an artificial light of good intensity when the daylight is still strong, the subjective effects of abrupt changes, both of intensity and of color, are avoided. In other words, the eye should be eased into the artificial illumination gradually and not plunged into it suddenly, as happens when the daylight is allowed to grow low before the artificial light is added. The best result, perhaps also the best economy, is obtained by turning on the artificial light before it seems really to be needed and allowing the daylight to fade out of the mixture gradually. When a fairly high intensity of artificial light is used and it is turned on when the daylight is still high, the effect is of a gradual transition from one to the other which is more agreeable to the eye and less detrimental to its efficiency.

Because of our belief that adaptation is the important ocular function involved in afternoon lighting, the investigation was concluded by making a brief study of the more obvious relations of the problem to adaptation. Two sets of experiments were conducted. In the first, a determination was made of the eye's deficiency in speed at the time the artificial light was added, due to the adaptation situation imposed. That is, the speed was obtained with the eye fully adapted to a mixture of artificial light and daylight of the same intensity and proportions as were used in the afternoon series when the artificial light was turned on, and the difference taken between this speed and that obtained in the afternoon series. This was done for the curve represented in figure 2. The period of adaptation to the mixed light was one hour. The speed was changed, as the result of adaptation, from 25.32 to 27.78 (shown at x in figure 2), an increase of 9.7 per cent.

As a supplement to these results, it was also determined what intensity a mixed light of these proportions must have in order to give the speed that had been obtained in the afternoon series, if the eye were to be fully adapted to the illumination employed. Again the period of adaptation was one hour. In the first case it was found that when the eye was fully adapted to an illumination of 3.13 ft. c. it attained to the same speed as was given by 4 ft. c. in the afternoon series; in the second case, the same speed at 7.73 ft. c. that it had in the afternoon series at 9.5 ft. c. That is, in the former case the eye required 28 per cent more light to give equally good results because it was not fully adapted, and in the latter case, 23 per cent more light. Roughly speaking, according to these results, in the first case a total of 28 per cent more light would have had to be planned for under the conditions obtaining in our test room at 5:55 p.m. on March 26th, than would have been required to give the same result in an inside room; and 23 per cent more at 6:25 p.m. on May 7th.

In the second set of experiments, the transition from early afternoon light to artificial light was made abruptly. The intention here was to get some estimate of the total effect of the preëxposure of the eye to the higher intensities of daylight on its subsequent powers of performance at the lower levels of intensity used in artificial lighting. In these experiments the eye was exposed for one hour to 60 ft. c. of daylight, horizontal component, 108 ft. c. vertical component, and the speed of vision determined. The daylight was then entirely excluded from the room and the artificial light turned on, 2.3 ft. c. horizontal component, 5 ft. c. vertical component. Speed tests were made immediately and at intervals of 5 minutes until complete readaptation had occurred. A graphic representation of the results is given in figure 3. The difference in the speed at the beginning and end of this period under artificial light shows the full effect of the daylight pre-exposure. At the beginning of this period it was 5.46; at the close 11.17, an increase of 105 per cent.

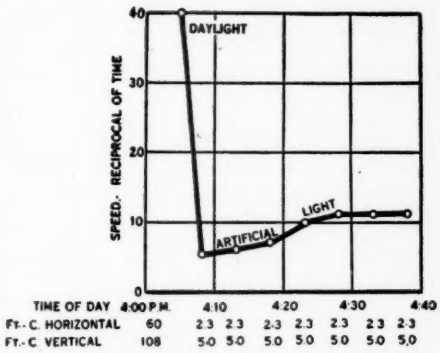


FIG. 3. THE EFFECT ON SPEED OF VISION OF AN ABRUPT TRANSITION FROM DAYLIGHT OF HIGH INTENSITY TO ARTIFICIAL LIGHT

As a supplement to these results, determinations were made of the intensity of light needed, with the eye fully adapted to the artificial light, to give each of the speeds obtained while the eye was progressively adapting. The results of these determinations are given in table 4. It will be seen that when the eye was fully adapted to the artificial light, only 0.83 ft. c. (36 per cent) was required to give a result equal to that obtained from 2.3 ft. c. immediately after the

change was made from daylight to artificial light; at the end of 5 minutes only 0.94 ft. c. (41 per cent) was required; at the end of 10 minutes 1.4 ft. c. (61 per cent); at the end of 15 minutes 1.87 ft. c. (81 per cent); and at the end of 20 minutes, 2.3 ft. c. (100 per cent).

By the use of artificial daylight with proper attention to adaptation effects, the transition from day to night lighting can of course be made still less conspicuous. In one of our laboratory rooms provided with a combined daylight and artificial daylight skylight, for example, the change can be made unnoticeable. While a skylight is not feasible for general use, much can be accomplished with desk and reading lamps equipped to give artificial daylight. Aside from the adaptation factor noted above, the change from daylight to Mazda light is annoying from the standpoint of color and the visual quality of the light. (1) Uncorrected Mazda light has a great deal of color. Illuminated with it, the printed page has an orange-yellow appearance. Black letters or other characters do not stand out from the background as clearly as on a white surface. The sensation difference between black and color is less than between black and white. (2) Mazda light is "fuzzy," while artificial daylight is smoother in quality. There is probably better focusing for artificial daylight and less scatter of light by the media of the eye. The clearer vision which is obtained with light properly corrected for color and composition is very helpful to old eyes and to eyes having residual refractive errors or defective vision from any cause whatsoever. (3) Mazda light is very irritating to many supersensitive and pathologic eyes. To a great number of them night work is made possible and even comfortable by the use of artificial daylight. The next great step in the history of lighting is to put artificial daylight on a production

TABLE 4

The immediate effect on speed of vision of a sudden transition to artificial light after one hour of adaptation to a high intensity of daylight, and the effect at intervals of five minutes until complete adaptation had occurred

TIME OF TEST	INTENSITY		TYPE OF LIGHTING	SPEED OF VISION	ILLUMINATION REQUIRED TO GIVE THIS SPEED WITH EYE FULLY ADAPTED	EFFECTIVE VALUE OF ARTIFICIAL LIGHT
	Horizontal component	Vertical component				
p.m.	*ft. c.*	*ft. c.*				*per cent*
4:05	60.0	108.0	Daylight	40.0	60.0	
4:08	2.3	5.0	Artificial light	5.46	0.83	36
4:13	2.3	5.0	Artificial light	6.17	0.94	41
4:18	2.3	5.0	Artificial light	7.19	1.40	61
4:23	2.3	5.0	Artificial light	10.10	1.87	81
4:28	2.3	5.0	Artificial light	11.17	2.30	100

basis. Adequate intensities have been made easily possible, diffusion and distribution of light have been fairly well taken care of, and means have been devised for eliminating glare from the source with any intensity of light that is apt to be used.[3] Color and composition of light is without question the outstanding problem in commercial and industrial lighting.

CONCLUSIONS

The outcome of the foregoing experiments is largely negative. As has already been indicated, uncertainty has been felt, both in the formulation of the problem and in the evaluation of the results obtained, because of the varied and unsettled nature of the opinions that have been held with regard to the visual effects that are produced by mixing artificial light with daylight. A few conclusions, however, are suggested:

(1) So far as the more important visual functions are concerned, there is nothing especially deleterious in the mixture of daylight and artificial light from the standpoint of color and composition, or in the difference in type of source ordinarily used to supply the components of the mixture. When the light was mixed in equal proportions—both components from the light-well, or one from the light-well and the other from side windows—and the tests made at equal photometric intensities at the test surface, the artificial light gave the poorest result, the daylight the best result, and the mixture of the two an intermediate result. The effect was roughly what would be expected from an illumination ranging in color and composition between daylight and artificial light.

(2) A greater total intensity of light is needed, however, during the late afternoon hours to give a satisfactory efficiency to the eye than is required at night or during the day in an inside room. This is because of the high intensity to which the eye has been exposed during the day and the rapid decrease of light in the middle and late hours of the afternoon; that is, in its recovery of sensitivity, the eye is not able to keep pace with the failing illumination. The deficiency is primarily in the eye, due to the state of adaptation imposed, not in the mixture of the two lights.

(3) The loss in visual efficiency due to this lag in adaptation can be decreased, and many of the unpleasant subjective effects due to the abrupt transition from daylight to artificial light can be minimized, by providing for a good intensity of artificial light and adding it while the daylight is still high. When the daylight is allowed to become low before the artificial light is turned on, the maximum lag in adaptation is experienced and the full effects of a sudden and disagreeable change both of intensity and color of light are produced. When a fairly high intensity of artificial light is used and it is turned on while the daylight is still high, the effect is of a gradual transition from one to the other which is more agreeable to the eye and less detrimental to its

[3] In this connection it may be noted that we have recently devised lighting units of different types which are completely glareless for lamps ranging from 25 to 1000 watts. These units at least indicate the possibilities that are ahead.

efficiency. One of the purposes of good afternoon lighting should be to make the transition from daylight to artificial light as gradual as possible.

(4) By the use of light properly corrected for color and composition, the transition can, of course, be made still less conspicuous. In one of our laboratory rooms provided with a combined daylight and artificial daylight skylight, the change from day to night lighting can be made unnoticeable. While a skylight is not feasible for general use, much can be accomplished with desk and reading lamps equipped to give artificial daylight.

Manuscript received April 4, 1932

News Notes

ENGINEERING: A CAREER—A CULTURE

An authoritative occupational monograph, *Engineering: A Career—A Culture*, has been prepared by the Education Research Committee of the Engineering Foundation, and is being widely distributed. Its purpose is to give to young men, to parents, and to teachers unbiased information concerning engineering and the training required for success in this profession.

An introductory chapter outlines "Requirements and Opportunities." Engineering "is one of the arts which interpret and apply science and experience through material things and human abilities. . . . . Its bedrock is science, its special tool is mathematics, and its aim is utility." The monograph seeks to show that this art is to be applied not only, as is the tradition, to physical creations, but to a far wider realm. "Politics . . . . is largely a task for the engineer. . . . . The engineer is the ally of many groups which are shaping the destiny of the race."

The five major divisions of the field—civil, mining and metallurgical, mechanical, electrical, and chemical engineering are carefully described and compared.

Two final chapters deal respectively with "Preparation for Engineering" and "Earnings of Engineers."

A great deal of care has obviously gone into the preparation of this monograph. It is expertly written. Obtainable through Engineering Foundation, 29 West 39th Street, New York; 15 cents a copy; special quantity rates.

TENTH INTERNATIONAL CONGRESS OF PSYCHOLOGY

Honored by the presence of H. M. The King of Denmark, Protector of the Congress, the Tenth International Congress of Psychology was formally opened on Monday, August 22, at 9 a.m. in the Festival Hall of the University of Copenhagen. Prof. Edgar Rubin, President of the National Committee, presided at the opening meeting. After a brief introduction and welcome to the members of the Congress by Prof. Rubin, F. J. Rorgjberg, Esq., Minister of Education for Denmark, spoke. He was followed by Prof. Rubin, who read a paper on "Some Elementary Time Experiences." At the close of the meeting, H. M. The King personally greeted a number of the visitors to the congress.

On the preceding evening at 9 o'clock, the members of the Congress were guests at an evening reception given by the National Committee at the Langlinie Pavillion, one of the show spots of Copenhagen. In addition to the members of the National Committee which included Prof. Rubin, President; Prof. A. Wimmer, Vice President; Prof. V. Kuhr, Vice President and Editor of Procedings; B. Dessau, Esq., Managing Director the United Breweries, Ltd., Treasurer, the guests were welcomed by the following reception committee: Minister of Education Borgjberg; A. Krieger, Esq., Chamberlain and Cabinet Secretary to H. M. The King; A Goll, Esq., Attorney General; J. Bülow, Esq., Chamberlain, Lord Lieutenant of Copenhagen; Prof. C. E. Bloch, Rector the University of Copenhagen; E. Kaper, Esq., and P. Hedebol, Esq., Burgomasters of Copenhagen; K. M. Nielsen, Esq., Director of Public Hospitals; Vilh. Rasmussen, Esq., M. A., M. P.; and Profs. N. E. Norlund, F. Brandt and J. Jorgensen.

Leaders in psychological work from America, England, France, Germany, Austria, Russia, and Italy contributed papers to the Congress. The American delegation was the largest. Prominent in this group were W. S. Hunter (Clark University) whose subject was "Voluntary Activity from the Standpoint of Behaviorism"; Arnold Gesell (Yale University), "The

Systematic Delineation of Infant Behavior Growth (Illustrated by Serial and Analytic Cinema Records)"; R. M. Ogden (Cornell University), Gestalt Psychology and Behaviorism"; Gordon W. Allport (Harvard University), "The Radio as a Stimulus-Situation, an Experimental Report"; W. R. Miles (Yale University), "Age and the Kinéphantom"; Margaret F. Washburn (Vassar College), "The Motor Factor in Mental Control of Cube Perspective and Rivalry Fluctuations"; W. F. Dearborn (Harvard University) "Mental and Physical Growth of Children"; C. E. Seashore (University of Iowa), "The Psychology of the Vibrato in Music and Speech"; Kurt Koffka (Smith College) "Uber Probleme der Farben-Wahrnehmung"; Clark L. Hull (Yale University) "Recent Experiments on the Nature of Hypnosis."

From London came Charles Spearman, who spoke on "Tetrad Differences When the Factors Are Not Additive" and "A Call to General Collaboration in Individual Psychology"; from Oxford, William Brown, whose subject was "The Experimental and Mathematical Evidence for the Existence of a Central Intellective Factor (g)"; and C. S. Myers (London) contributed "The Relation of Acts and Contents of Consciousness" and "Recent Evidence of the Value of Vocational Guidance." Prof. E. Claparéde, representing France, conducted a symposium on Terminology. The group from Germany included Wolfgang Köhler (Berlin) on the subject "Zur Theorie der Reproduction." Charlotte Bühler from Vienne spoke on "Kind und Familie, Psychologische Untersuchung" and "Zur Psychologie des Menschlichen Lebenlaufes." Russia was represented principally by J. P. Pavlov (Leningrad) whose subject was "Das Dynamische Stereotyp der Grosshirnhemisphären." Italy was represented by Sante de Sanctis (Rome) who spoke on "Nuovo Contributi Alla Psicofisiologia Del Sogno." Papers were also read by representatives from Holland, Belgium, Poland, India, Denmark, Switzerland, Spain, Hungary, Bulgaria and Jugo-Slavia.

Elaborate arrangements were made for the entertainment of the wives and feminine members of the Congress. On Monday they were taken on an excursion through Copenhagen, visiting Rosenborg Castle and the Bispebjerg Hospital where tea was served. On Tuesday they visited the Thorvaldsens Museum and Christiansborg Castle where the Royal Apartments and Parliament were seen. On Wednesday they were taken on an excursion by motor boat through the harbor of Copenhagen, followed by a tour through and lunch at the Tuborg Breweries. On Thursday early in the afternoon the ladies were taken to the Royal Copenhagen Porcelain Factory and Messrs. Bing and Grondahls Porcelain Factory. At four o'clock, they joined the men at a reception at Carlsberg where Prof. Niels Bohr gave impressions of conversations with the late Prof. Harald Hoffding. In the evening the members were guests at a theater party. Friday morning the members were taken to see the "Permanent Exhibition of Danish Applied Art and Handicraft." This was followed by a reception at the Town Hall. From there, the members of the Congress were taken to the "Eremitage" and then to the "Skodsborg Sobad" where supper was served. Members were also given complimentary admissions to the Tivoli Gardens, Copenhagen's open-air amusement center, and to the Glyptotheke.

—Robert N. McMurry.

THE AMERICAN RED CROSS

Events of the years that have succeeded America's "peak of prosperity" in 1929, have proved to the least thoughtful among us that the material things of life may be suddenly swept away by disaster. Security believed to be life-long is put in jeopardy by the loss of position and the curtailment of income. Yet there has been no shrinking in the dividends paid by unselfish service; no declination in the par value of neighborly kindness. If the depression has done nothing else, it was brought home the fact that we are all recruits in the great army of human brotherhood, to fight misfortune in whatever guise it may be found.

In the ranks of the American Red Cross—to which every man and woman is eligible—exists opportunity for volunteer service limited only by individual capacity. In the annual Roll Call,—from Armistice Day until Thanksgiving—children as well, have a chance to help on its nation-wide administration of relief by "joining up." From the dollar memberships taken during this period are financed the humanitarian enterprises of the Greatest Mother. Food, shelter, clothing will go into millions of homes this winter as a result of your generous giving now.

—*Prepared by the American Red Cross.*

PSYCHOLOGICAL EFFECTS OF NOISE

Report No. 65 of the Industrial Health Research Board (London) contains two studies: (1) Psychological Experiments on the Effects of Noise, by K. G. Pollock and F. C. Bartlett; (2) The Effects of Noise on the Performance of Weavers, by H. C. Weston and S. Adams. The first was conducted in a laboratory; the second, in a factory. Both indicate that noise may, under certain conditions, exercise a disturbing effect upon efficiency, though probably to a smaller degree than is commonly supposed to be the case. The studies throw light upon what kinds of noise are most disturbing, and they show how some of the deleterious effects of noise may be safely counteracted.

PERSONAL ITEMS

JOSEPH H. WILLITS is now Dean of the Wharton School of Finance and Commerce, University of Pennsylvania.

C. O. SAPPINGTON, M.D., formerly of the National Safety Council, has joined the editorial staff of *Industrial Medicine*, the new magazine published by Industrial Relations, Inc.

FRANCIS H. SISSON, Treasurer of the Personnel Research Federation, has been elected President of the American Bankers Association.

LEON WALTHER, of J. J. Rouseau Institute in Geneva, Switzerland, during a recent visit to this country, lectured before vocational guidance groups at Teachers College, Columbia University, and in Philadelphia. He stressed the importance to occupational adjustment of fundamental bents, inclinations, or attitudes toward broad kinds of activity.

CALENDAR

DECEMBER 7–10. *Annual Meeting, American Vocational Association*, Kansas City.

DECEMBER 7–9. *Joint Meeting of Taylor Society and Society of Industrial Engineers*, New York.

FEBRUARY 22–24. *Meetings of National Vocational Guidance Association, American College Personnel Association, National Association Deans of Women, and other organizations interested in personnel*, Minneapolis.

Personnel Books

EDITED BY O. MILTON HALL

INDUSTRIAL PSYCHOLOGY

By Morris S. Viteles. New York: Norton, 1932, xviii + 652 pp., $5.50

Reviewed by B. V. MOORE, *Pennsylvania State College*

At least two types of books are mileposts in the progress of a science and are invaluable to the student who attempts to be informed in a particular field. One is the product of the genius who presents a new fact, idea, or program. The other type of book is written by the master of a field who can comprehend a mass of isolated findings, see the form of the whole, and present them as an integrated body. Münsterberg's *Psychology and Industrial Efficiency* exemplifies the first type. Viteles' new volume represents the second type. Of course it could not have been written twenty years ago. A fair examination of the book by an academic psychologist would force him to realize that something has been happening in the "vast laboratory" of industry, and even an applied psychologist who has been accustomed to developments in this field has a new temptation to become expansive.

This book concerns itself "only with the application of psychology in promoting industrial efficiency through improved individual adjustment." The unusually extensive but well organized data and findings concentrated into one volume include not only results from research in industry but also pertinent results from investigations in other fields of psychology. In turn, as the author states in his preface, the new techniques, new equipment, and new viewpoints of industrial psychology have thrown light on general principles of interest to the psychologist regardless of his particular field of investigation. "It may truly be said that the scope of industrial psychology is as extensive as that of psychology itself, the chief difference being the specific situation with which the latter is concerned." This book is of interest to anyone who wishes to complete and enrich his picture of psychology today.

The volume has a simple organization of three main parts, The Foundations of Industrial Psychology, Fitting the Worker to the Job, and Maintaining Fitness at Work. After an introductory chapter in the first section, three chapters treat respectively the economic, social, and psychological foundations of industrial psychology. The first of these might also have been called the engineering foundations, for it reviews the pioneer influence of Taylor, Gilbreth, and Thompson. Chapter V covers the history of industrial psychology in other countries as well as its rise and scope in the United States. The last two chapters of this section discuss the nature, distribution, and origin of individual differences as fundamental to the adjustment of the individual for increased efficiency. The widely taught conclusion that desirable traits are positively correlated is stated and then challenged by presenting the results of Hull and others which indicate that concomitant variation is true only of more or less similar traits within a relatively narrow range. The implication is that we can expect improved adjustment from scientific matching of capacity and occupation. A psychologist will recognize that the origin and distribution of individual differences are pertinent to individual adjustment, but a few readers will probably feel that they are being led somewhat afield in this discussion. For the

reader who does not already have an adequate knowledge of statistical terms, it is doubtful whether the brief discussion of these adds meaning to the chapters.

The second part of the book opens with a good chapter on basic factors in vocational selection. This includes a discussion of the cost of labor turnover, the nature and limitations of general intelligence as a factor in vocational fitness, and the significance of temperament, character, and interest in vocational fitness. The next chapter on job analysis emphasizes the psychological viewpoint, including the author's own job psychographic method and Fairchild's method of skill analysis. There is a chapter on interview techniques and two chapters on standardization and administration of psychological tests. Three chapters describe typical projects involving the use of tests in the selection of workers for skilled and semi-skilled work, the transportation industry, office occupations, and technical and supervisory positions. Much of Viteles' own work is described here, and the chapters are enriched by many examples drawn from European psychotechnicians as well as from American investigators.

The last part on maintaining fitness at work has three chapters on accident prevention, two chapters discuss psychological principles of training, two more deal with industrial fatigue, two are on monotony, and the last three treat motives in industry, the maladjusted worker, and problems of supervision and management. The chapters on training methods get away from academic discussions and seek light from investigation in industry on the effectiveness of the whole versus part method, the transfer of training, primacy of emphasis on speed or accuracy, and similar questions. The relative meagerness of scientific findings bearing directly on the problems of supervision and management indicates that there is much to be done by psychologists. Throughout the book, and particularly in the later chapters, the value of the volume has been much increased by introducing from foreign literature, especially the German, the results of many investigations of a nature not commonly available in the publications of this country.

The author has been consistent with his previously stated thesis that the industrial psychologist should be more than a technician with a kit of tests and statistical tricks. The book is a scholarly treatment by a psychologist of the fundamental assumptions and principles as well as techniques involved in promoting industrial efficiency through happier individual adjustment. The author has carefully given credit to all original sources for his material. This not only illustrates his fairness in treatment of all material, but it also increases the value of the volume by making it an annotated bibliography. In view of the great amount of superior work represented by the book, it is regretted that the poor technique seen in some of the illustrations mars its appearance. Although rapid progress is being made in the field of industrial psychology, the soundness of this author's work will doubtless make it a standard treatise for some time.

INDUSTRIAL PSYCHOLOGY IN PRACTICE

By H. J. Welch and G. H. Miles. New York: Pitman, 1932, xiii + 249 pp., $2.50

TEN YEARS OF INDUSTRIAL PSYCHOLOGY

By H. J. Welch and C. S. Myers. New York: Pitman, 1932, ix + 146 pp., $2.00

Reviewed by GEORGE W. HARTMANN, *Pennsylvania State College*

If there still remain any doubting Thomases who question the "practical" value of psychotechnology, they should be required to read these two simple but authoritative volumes. They present a convincing record of scientific achievement and direct human service which can hardly be matched in any field of knowledge, with the possible exception of the medical disciplines.

It would be superfluous to introduce two

of the authors, Myers and Miles, both honored and familiar names in British scientific circles. Mr. Welch, however, is now suddenly revealed as one of the guiding spirits of the world-famous National Institute of Industrial Psychology. A distinguished and successful London business leader, he has acted as the chairman of the Board of the Institute since its inception and propagandized mightily in its behalf, but as far as the present reviewer is aware, these volumes constitute his first ventures into print in the name of the cause he has served so well.

The first of these companion books is probably the more valuable to the general reader. In lucid form and through the medium of rich illustration (there are 142 figures, including photographs and plates) the authors present their story of specific accomplishment in innumerable industrial and commercial situations. Despit occasional "choppiness" of style, their manner of presentation is pedagogically effective, much of the material being organized in the form of theses such as: "Long hours of work and overtime are wasteful and are detrimental to human well-being" and "Rest pauses reduce fatigue, alleviate monotony, and allow greater output," followed by a variety of examples and supporting evidence. So rigorously have they excluded any trace of the theoretical and concentrated upon the impressive marshalling of concrete cases of improvement in well-being and output, that even the least academically-minded manager or engineer must be curious to inquire what peculiarities of human nature led to such spectacular results. The regularity with which beneficial changes were secured may lead the uninitiated reader to feel that this is too good to be true; at any rate, he cannot but be strongly affected by this survey of what was unquestionably one of the great developments of the post-war era.

It should not be assumed that this volume is simply a concealed vehicle of self-praise, for while it is true that the majority of the references concern the work of the Institute's own investigators, ample citation of foreign, especially German and American, contributions is made. As a convenient digest of the positive achievements of the industrial psychologist in attacking the typical problems encountered in efficiency of movement, control of environmental conditions, planning and routing, avoiding waste, selecting and training personnel—to mention but a few areas of interest—the book is unsurpassed. In some instances of conspicuous success the outside observer may be tempted to exclaim, "Why, this is only common sense," oblivious of the fact that common sense failed to recognize the existence of issues which had been crying out for solution for many years before the advent of the industrial psychologist. The following quotation from the conclusion, which deserves a wider circulation, suggests the admirably restrained enthusiasm motivating the entire performance: "It is inconceivable that in the future any person in an important administrative position can be qualified for the job unless he has some considerable knowledge of what has been accomplished, an appreciation of the technique of approach to human problems, and an acquaintance with psychological principles. Above all, it is essential to realize that any attempts to utilize these or any other methods merely for exploitation of the employee will inevitably lead to ultimate failure. One of the vital contributions of psychology to industrial progress has been to show that the exploitation of the worker, whether deliberate or otherwise, through the maintenance of harmful working conditions, is economically as well as socially unsound."

The second of the above titles is a brief but adequate history of the National Institute as an organized body, with portraits of the more prominent persons identified with it. Its foundation evidently dates from the delivery of two lectures at the Royal Institution of Great Britain in 1918 by Dr. Myers, who soon after was approached by Mr. Welch, known for his interest in vocational guidance, as to the possibilities for forming the organization. Such an influential Fabian as G. D. H. Cole lent his assistance in winning the sympathies of the trade unions, an essential labor support which the Institute has continued to maintain.

Beginning in 1922 with two office rooms, the Institute has grown to twenty-six, established a Scottish and Australian division,

and carried on over 200 investigations covering practically the whole domain of industry. Its services have ranged from a restaurant in New York to a gold mine in South Africa, and it received over $100,000 in commercial fees in 1930 alone. Equally extensive have been its governmental, municipal, and charitable labors. As in so many other public but not non-governmental bodies, the Institute's officers have been compelled to devote much of their energy to the problem of raising funds, in which inglorious but necessary enterprise they have fortunately been aided by certain foundations, members of the royal family, prime ministers, and other high dignitaries. The book obviously belongs in the category of publicity documents, ending as it does with a plea for a permanent endowment with which to ensure the stability of its research, teaching, and consulting service.

One cannot read this pleasing account without feeling that the organization has established itself as an enduring influence in English economic life. Indeed, the British Institute remains unique; nowhere is there to be found a body with so complete a programme of work for the solution of the human problems in occupational life.

EMERGENCY WORK RELIEF

By Joanna C. Colcord, Assisted by William C. Koplovitz and Russell H. Kurtz. New York: Russell Sage Foundation, 1932, 286 pp., $1.50

Reviewed by JOHN R. SHILLADY, *New York*

Miss Colcord and her associates report in this volume their study of emergency work relief in 26 cities, having 30 per cent of the urban population of the United States, and located in 12 states. Conditions in these selected cities may be regarded as typical of what happened in the 200 American communities in 1930 and 1931 which reported some form of work relief.

The volume opens with a brief discussion of the "development of work relief," including a résumé of previous foreign and American experience. This is followed by illuminating reports on the work relief programs of the 26 cities visited by field workers, and by "suggestions based on the common experiences in the communities studied" for setting up a program of work relief. The volume includes, also, a list of the cities reporting work-relief plans, which were not reached in the field studies, and for the 26 cities, tabular summaries of expenditures, numbers of persons employed, the auspices (public and private), and a selection of forms used by the administrators. Methods of administration (personnel, registration, investigation, assignments, wages, health and accident provision) are described for each city.

The total cost of work relief in the 26 cities was a little more than twenty-four and a half million dollars. The period covered did not exceed a year in any city. One finds that approximately 185,000 otherwise unemployed persons in cities of nearly 20,500,000 population received work relief at an average cost of $133.00 per person employed for the period (say one year), or about $2.56 per week, if spread over the whole year. The actual average weekly work relief wage payments per individual were less than this amount. Incidental expenses, and in some cases but not generally, the costs of materials came out of the total expenditures figure given.

Nothwithstanding that work relief gave so little relief in comparison with the need, and was in no sense an adequate substitute for real wages, the reviewer believes that the effort to supply work, and the work itself, was praiseworthy. Makeshift though it may have been, it was a better makeshift and more nearly approximated "real" work than has been the case in previous depressions. He agrees with the authors when they assert that the case is not made for "direct" relief or "work" relief when family agencies can demonstrate that "direct

relief" gives more relief per dollar expended. "It is impossible by this form of reckoning," the authors say, "to include the spiritual values of morale and self-respect conserved, the advantage to the city of having money put in circulation, and the prevention of social disorder and crime."

Rochester evaluated the "efficiency of the work" as compared with contract work. Its competent engineers rated heavy grading at 15 per cent efficient; light grading reached 75 per cent, building and construction 60 per cent, and wrecking 92 per cent. A 52 per cent average rating was given for all projects.

The high-spot of community resourcefulness was reached by Philadelphia, in the reviewer's opinion. Staffed by an industrial manager and personnel director of wide experience, whose assistants included 10 trained personnel men for placement, skilled accountants, an architect, and field supervisors, all lent and paid by business concerns, Philadelphia's work relief program exhibited imagination in planning. Skilled and professional employment, "white-collar" jobs, work for women, for architects, engineers, dietitians, cooks, entertainers, musicians, recreation workers (as morale conservers), typographers (on Braille), draftsmen, file clerks, statisticians, traffic checkers, publicity work, radio talks, even "questionnairing"—were among the work relief jobs.

A special "report on traffic improvement work by workers from the Committee on Unemployment Relief," issued in June, 1931, by the traffic engineering office of the Philadelphia Department of Public Safety, and quoted in the volume under review, lists 19 traffic projects fully carried out, from spotmapping and field studies to educational, statistical, and drafting work. Eighty-seven thousand accident records were transcribed. Seventy-six thousand dollars was paid in work relief on traffic projects, which could not otherwise have been undertaken.

The authors say: "There were triumphs of organization in the face of difficulties, which stir the imagination; but nearly all the plans were handicapped by too late recognition of the magnitude of the task which had been undertaken."

MANAGING MINDS

A Practical Psychology for Vocational Teachers. By Charles R. Allen and Henry A. Tiemann. New York: Century, 1932, xiii + 286 pp., $2.50.

Reviewed by PAUL FENDRICK, JR., *New York*

The authors, particularly realizing the needs of vocational teachers, have endeavored to explain in simple language certain information which they regard as basic for approved practice in vocational education. The book contains much, however, which could be of value to public school educators and personnel workers in general.

This book is valuable particularly from the standpoint of practicability which the authors have retained throughout their presentation. Their problem was one of dealing with certain human characteristics that are matters of common experience. Only fundamental psychological concepts such as the learning process, the thinking process, habit-formations, motives, etc. are treated.

The tenet that "most people think concretely" is well exemplified in the handling of their material. As an aid to expand the reader's own panorama, a series of practical questions has been appended to each chapter in order to further the transference of their position into concrete situations.

Certain evangelizations are introduced and, if well disseminated, could be of much value in influencing general school administrators. The thesis is maintained that the usual school administrator thinks of vocational education primarily as an opportunity to motivate general educational work rather than as a distinct educational enterprise for the purpose of equipping individuals with the ability to get a job, or hold a job when

they get one. A strong plea is also made to avoid the "dumping-ground" idea with regard to vocational schools.

A sole suggestion could possibly be made regarding the title of this volume. It appears that the principal labelling would have been a little more accurate if the subtitle had been substituted for "Managing Minds."

THE NATURE OF HUMAN CONFLICTS

By A. R. Luria. Translated by W. H. Gantt. New York: Liveright, 1932, 431 pp., $4.00

Reviewed by CURT ROSENOW, *New York*

The estimates of the value of this book will vary widely. Adolf Meyer, in a foreword, tells us that Luria "offers us a true psychobiology, and not largely neurologizing tautologies." Many will share this view. Others will see merely neural tautologies modernized. Some will see new and fertile fields opened to objective psychological experimentation. Others will consider the experimental facts reported to be trivial instances of facts known, summarized, and accepted for many decades.

The field of the book is described by the title and subtitle. The point of view is organismic (shared, in a general way, by the reviewer). The immediate interest is in the part played in disorganization and control by the nervous system,—in the neuro-psycho-functionalisms (described in extremely general terms).

The conclusions: In the cultured adult, conflicting tendencies encounter a functional barrier preventing direct motor expression. This barrier turns out to be speech, overt or "internal," or other symbolic processes. Control is the securing of stimuli, external or internal, which resolve the conflict. In emotion, organized behavior is disorganized into organizations of a lower order genetically. The only lower orders mentioned specifically are diffuse motor activity and vegetative process, but, inasmuch as both the functional barrier and the process of control are connected by the author with the cultural and educational development of the individual (in extremely general terms), one would surmise that he has in mind a genetic hierarchy of cultural and educational organizations involving symbolic processes.

The facts: "Experiments were performed in situations arousing strong and genuine emotions. Also hypnosis was used to create emotions artificially. Children, adults, criminals, neurotics, psychotics, imbeciles, and others were experimented with. The procedure, almost invariably, was the study of kymographic tracings of finger movements obtained in a variety of experimental settings. For example, the subject would be told to synchronize a finger movement with a verbal association response. Irregular "spontaneous" movements such as trembling are evidence of diffusion; premature movements, of faulty inhibition; delayed verbal responses suggest the interpolation of symbolic processes,—etc. A critical discussion of the numerous experiments is beyond the scope of a brief review. Of practical interest is the claim of the author that his technique is superior for the detection of guilt of criminals.

Adopting the terminology of the author, it seems to the reviewer that the study of the developmental, cultural, educational organizations is the most fertile and significant field open to psychology. He notes also that Luria (and others) have found a place for symbolic processes in "objective" psychology. He trusts the time will come when "objective" psychologists will realize that symbolizing is an *objective* activity of the entire organism worth studying, not for the sake of its psycho-neurology, but for its own sake. Perhaps, when that time comes, they may not be content to leave the study of that field to therapeutic practitioners and they may learn something about the "stimuli" which control human beings.

VOCATIONS IN INDUSTRY—VOL. III

By May Rogers Lane. Scranton, Pa.: International Textbook Co., 1932, xv + 467 pp., $3.50

Reviewed by ROY N. ANDERSON, *Teachers College, Columbia University*

This is the third volume in May Rogers Lane's series, *Vocations in Industry*, and deals with the manufacturing and mechanical industries. It is a veritable encyclopedia of occupational information in regard to the industries included in this division of the U. S. Census classification. The book is an indispensable aid to the vocational counselor and teacher of the class in Occupations. It can be used either as a text with supplementary material, or as a reference book if no single book is used as a text.

One of its attractive features is that the general descriptive material is so organized that it can be utilized with visual material. The slides are available from the Keystone View Company. This makes it possible for the vocational counselor to vitalize the class in occupations by taking the students on stereoptican journeys through the various industries.

The book is very well illustrated with pictures and charts, and the appendices contain a useful list of questions to be answered by the students, and a selected list of slides and stereographs.

A "Manual to Accompany *Vocations in Industry*" is published separately. This contains interpretative material extracted from the Census data for various states, cities, and counties, as well as suggested lesson plans for the teacher.

The book is also exceedingly useful in training courses for vocational counselors, civics and social science teachers, and some sections on industries would be valuable to science teachers in general.

GUIDANCE IN SECONDARY SCHOOLS

By L. V. Koos and G. N. Kefauver. New York: Macmillan, 1932, xi + 640 pp., $2.50

Reviewed by ROBERT HOPPOCK, *National Vocational Guidance Association*

Prior to 1932 most books on guidance were composed principally of the author's ideas as to what guidance should be. We now witness during one year the gratifying appearance of two volumes which add some quantitative data as to what guidance is. The report of the White House Conference Committee on Vocational Guidance and Child Labor reported the vocational guidance practices of one hundred fifty school systems. Koos and Kefauver now give us *Guidance in Secondary Schools*, with its report on guidance practices in 336 high schools and 52 junior colleges. These data constitute the core material which they have used to supplement and interpret their concept of guidance. Their book is submitted as a textbook for courses in guidance in higher institutions and as a manual for those responsible for guidance in secondary schools.

The word "guidance" has been used by different writers to designate so many things that one can no longer discuss the subject intelligently without first defining what he means by it. Koos and Kefauver have suggested a redefinition of terms which may help somewhat to clear the air, but which will certainly produce pyrotechnics in the process. Challenging Brewer's concept of education as guidance, they make a clear-cut distinction between the terms guidance and education. Much of what has been called health guidance, moral guidance, etc., Koos and Kefauver designate as merely good, modern education. They declare in italics that "curriculum making is not guidance," and go on to say, "The upshot of the whole matter is that guidance is not the whole of education. The term should not even be regarded, as some seem to regard it, as a beneficent synonym for education—The type of expansion of the concept (of guidance) that would include these other features of the school is sheer inflation." The term "guidance" they reserve for the

process involved in helping the student to select from the offerings of the school those activities which will be of most benefit to him. All guidance thus becomes educational guidance. When a subject or an extra-curricular activity is chosen in the light of its effect on the student's health, we have health guidance. When it is chosen as an aid to social adjustment, we have social guidance. But once the choice is made and the activity commences, the process becomes one of training, not guidance.

Two main phases of the concept of guidance are accepted by the authors and defined as follows: (1) to distribute youth as effectively as possible to educational and vocational opportunities and (2) to help the individual to make the optimal adjustment to educational and vocational situations. Vocational guidance they regard as "only one portion of the whole program, although a most important one.—Effective guidance involves the distribution of students to vocations in which they have a reasonable expectation of success, and in which there will be a maximal use of their talents. This relationship is unquestionably one of the most critical in the whole scope of guidance." The course in occupations is described as having two major purposes: (1) to give information about occupational opportunities (2) and to develop sympathy with people in vocational groups other than one's own. Among the fifty-two junior colleges only eight per cent reported courses in vocational information. The high schools reported such courses in all grades from the seventh through the twelfth, with the largest proportion in the ninth grade.

The content of the book is divided into four parts: (1) informing students concerning opportunities, (2) securing information concerning students, (3) guiding the individual student, (4) organizing guidance service. Among the chapter headings we find: information through publications, information through the course on occupations, exploratory courses, information obtained from students, records of school work, measurement, counseling, deans of girls and boys, home-room advisers, and the program of guidance. For the first time, the authors of a guidance text-book have ventured specific suggestions as to how the counselor should deal with various of the puzzling problems which repeatedly present themselves. There are, for example, definite recommendations for guiding the student (1) with low-level ability and high ambition, (2) with high-level ability and low ambition, (3) in planning his educational program, (4) in the choice of a curriculum, (5) in the choice of a secondary school, (6) in the choice of a college, (7) in the choice of extracurricular activities, (8) in the choice of a vocation, and for guiding, (9) the failing student, (10) the personally maladjusted student, (11) the former student during early employment.

The book is certainly one of the most significant contributions to guidance literature. Written by two authors with wide backgrounds of experience both in guidance and in the administration of secondary schools, it is frequently in sharp contrast to the earlier books written by specialists in the guidance movement. It will find a wide acceptance among high school principals and will be used as a text in numerous training courses. Anyone who keeps up to date on guidance literature must necessarily grant it a careful reading.

THE CHOICE OF AN OCCUPATION

By Albert B. Crawford and Stuart H. Clement. New Haven: The Department of Personnel Study, Yale University, 1932, 495 pp., $2.00

Reviewed by J. B. MINER, *University of Kentucky*

Vocational counselors now have available in this quarto volume a guidance tool which wisely and as adequately as possible meets the needs of men entering occupations after college training. This 1932 revision by the director and assistant director of the Yale Department of Personnel Study of an earlier experimental description of occupations for Yale men is easily the most outstanding achievement in this field. Nowhere else will the college man or adviser find brought together forty large pages of such up-to-date

information and wisdom on the general problem of choosing a vocation, supplemented by discriminative introductions to the professions, and to the fields of science, of engineering, of business and of the productive industries. These are followed by the best available information as to outlets for personal characteristics, difficulties, and opportunities in sixty special lines under these groups.

The student is led first to evaluate his own activities to discover his own deeper interests and special abilities and then shown how they may find expression in various types of occupations. He is warned against the fallacy that there is only one perfect niche. He is encouraged to realize that both a job and a man are flexible in vocational adjustment. The contrast is brought out between the individual nature of the professions and the teamwork demanded in the large corporations. Emphasis is placed upon the necessary patience while gaining experience in any field and waiting for the maturity necessary for responsibility.

The directions indicate how college course may be utilized for vocational guidance and for making the shift from general to specific training. The student is prepared for the contrast between college and later life, told how to meet a prospective employer with the right attitude, and encouraged to make his choice primarily on the basis of prolonged satisfactions and congeniality of associates even in the lower plateaus of the occupations where discouragement to the misfit is hardest to bear.

On the scientific side of guidance the volume assembles in five tables the best statistics which have been gathered regarding the salaries of college graduates, including information from nearly 16,000 Yale graduates in business. Curves comparing the salaries for thirty years of those remaining in the first job with those changing favor somewhat the permanent employee. Comprehensive distributions of salaries for the early years and at age forty, as well as for different occupations are shown. Strong's blank for analyzing vocational interests is approved and careful plans for an individual's analysis of interests and of the occupations are reproduced.

Each business is treated so far as possible from the point of view of its opportunities for the functions of research, distribution, purchasing, finance, personnel, and management. The references after each occupation are selected to meet the student's inquiries, numerous functional charts are introduced, contrasts such as those between humanistic and scientific aptitudes are made clear. Expert information has been secured from each special field and the whole admirably edited to avoid over-selling. The authors have gone far toward orienting the student at a time when lack of experience makes it necessary for him to depend upon the assembled and organized experience of others.

MUSCULAR WORK, FATIGUE, AND RECOVERY. By G. P. Crowden. New York: Pitman, 1932, 74 pp., $1.00.

The first action deals with the main facts in regard to the cycle, muscular work, fatigue, and recovery, describing changes in muscles and blood resulting from muscular work. Methods of investigation are briefly described. It is shown that scientific study will yield the most economical methods of executing work. The final section deals with factors which influence the above cycle as a whole—temperature, ventilation, rest pauses, diet, etc.

INDUSTRIAL MANAGEMENT: A CASE BOOK. By E. C. Robbins and F. E. Folts. New York: McGraw-Hill, 1932, xiii plus 757 pp., $5.00.

This large volume is composed of 117 actual cases of situations in industry, all illustrating points in industrial management. The problems given in the first part of the book involve concepts, such as specialization, diversification, and integration, which underlie present-day American management. Part II is devoted to the application of the fundamentals thus developed to the managerial control of raw materials, labor,

and plant and equipment. Each case contains pertinent factual information, and the student's first task is to seek this out. With these data as a basis for discussion, the student is then led to an analysis and synthesis of the factors which operate, or should be made to operate, in the case under discussion.

Over two hundred pages are devoted to problems of personnel: labor supply, wages, hours, working conditions, safety, employment security, pensions, personnel control, etc. About thirty well chosen cases illustrate this section.

How To Get a Position in School or College. By George W. Cox and W. H. Janes. Columbia, S. C.: Southern Teachers' Agency, 1932, 98 pp., $1.00.

The authors, men of long experience in teacher-placement agencies, describe the art of applying for and securing positions in schools and colleges. Practical methods and guides are given, and the book is not without an inspirational element. Detailed instructions on making an effective application, and on preparing letters to prospective employers are given, as well as hints on how to make a good impression in interview.

The Evolution of Human Behavior. By Carl J. Warden. New York: Macmillan, 1932, 248 pp., $3.00

Most books on human evolution have been concerned chiefly with the evolution of bodily structures. Dr. Warden, who is Professor of Psychology at Columbia University, takes quite a different approach. Behavior, rather than structure, has been stressed.

After being shown the natural kinship between man and animal, the reader is taken through the various stages of the evolution of modern man. Development of the anthropoids into early human stock, and the survival and further development of the generic type, Homo sapiens, is described. The author comes to the present time with a chapter on "Race and Civilization," and concludes with a suggestive and thought-provoking chapter on the future evolution of man, based on present trends.

This book is written for the general reader.

Purposive Behavior in Animals and Men. By Edward C. Tolman. New York: Century, 1932, 463 pp., $5.00.

At last we have a psychology based exclusively upon human behavior—whether external or internal—but upon behavior in which an observer may discern emotion, thoughts and purposes. With Professor Tolman psychology becomes a true science and therefore does not declare that any immaterial objects, e.g. souls, subjective states of consciousness, exist, but simply observes and summarizes all the changes in the physical objects in its field. For him the mind that each of us has is not his own mind, so far as anybody knows, but the mind that an observer sees in the behavior of the person observed. Professor Tolman thus succeeds in hinging together into a real unity behaviorism, gestaltism, and the insistence of the old introspectionists that man is intelligent and purposive.

The conclusions of the book are based upon a wealth of "excitingly significant" laboratory experiments chiefly with mice (to which the book is dedicated) cats, dogs, apes, and men, almost all of which are new to the general public. Of many revisions of current thought suggested by the findings of this book, we shall name the following as being of the most immediately practical importance. Men learn not by the repetition in conjunction of the elements which they wish to associate, but by their *choice* out of repeated total situations of the elements which lead to a desired end. In this process a certain amount of mistaken choice is essential. And to some degree indifferent experimentation or even failure or pain stamps in reality better than does success; but finally success in satisfying drives or "instincts" is the standard of learning.

Pastoral Psychiatry and Mental Health. By John Rathbone Oliver. New York: Scribner's, 1932, 330 pp., $2.75.

This book is designed to give pastors a working knowledge of mental illness, for such is considered to be a proper and necessary part of their equipment. While the physician may not ethically seek out patients, clergymen are able, on the other hand, actively to do much toward preven-

tion of serious mental conditions. The fundamentals of psychiatry and mental hygiene are presented in a setting familiar to clergymen. The author gives evidence of being thoroughly familiar with both fields.

MEN AT WORK: PHOTOGRAPHIC STUDIES. By Lewis W. Hine. New York: Macmillan, 1932, 48 pp., $1.75.

This sumptuously printed volume tells, almost without words, the thrilling story of varied employments in the machine trades, in transportation, and in the building industry. A boy who has the good fortune to come upon this book will see, through its gripping pictures, many motives that lead to superior workmanship, forces that make character.

EDUCATION FOR NEWSPAPER LIFE. By Allen Sinclair Will. Newark, N. J.: The Essex Press, 1931. 314 pp., $3.00.

A book which deals with the chronological account of the development of the School of Journalism at Rutgers University during the past five years. It shows how the curriculum has been worked out in connection with the New Jersey Press Association, rather than in academic seclusion, in an attempt to develop a "newspaper man's school of journalism." The description of this undertaking should be of value to those who are concerned with the training and education of aspiring journalists, as well as with the curriculum content for a school of journalism.

New Books

ECONOMICS

EMERGENCY WORK RELIEF. By Joanna Carver Colcord. New York: Russell Sage Found., 286 pp., $1.50.

SALARY AND WAGE POLICY IN THE DEPRESSION. New York: Nat'l Industrial Conference B'd, 1932, 75 pp., $1.50.

SHORTER HOURS. By Marion Cotter Cahill. New York: Columbia Univ. Press, 1932, 300 pp., $4.50.

WORLD ECONOMIC SURVEY 1931–32. League of Nations. Boston: World Peace Found., 1932, 327 pp., $2.50.

WORLD SOCIAL ECONOMIC PLANNING. New York: International Industrial Relations Inst., 1932, 2 v., 998 pp., $2.50.

GUIDANCE

AN OUTLINE OF CAREERS. By Edward L. Bernays. Garden City, New York: Doubleday, 1932, 512 pp., $2.50.

FIND YOURSELF: HOW TO CHOOSE YOUR LIFE WORK, PREPARE FOR IT, ENTER UPON IT, AND SUCCEED IN IT. By I. David Cohen. New York: Holston House, Sears, 1932, 284 pp., $2.00.

VOCATIONAL INFORMATION

AN OUTLINE OF CAREERS FOR WOMEN. By Doris Fleischman. New York: Doubleday, 1932, 528 pp., $2.50.

INSTRUCTION SHEETS FOR MAKING AN OCCUPATIONAL INFORMATION FILE. By May Rogers Lane. Scranton, Pa.: Internat'l Textbook Press, 1932, 25 pp., pap. 75¢.

MEN AT WORK. By Lewis W. Hine. New York: Macmillan, 1932, no. p. il. O c., $1.75.

THE FARMER SOWS HIS WHEAT. By Mrs. Adele Gutman Nathan. New York: Minton, Balch, 1932, $2.00.

THE PRINTING TRADES AND THEIR WORKERS. By Florence Elizabeth Clark. Scranton, Pa.: Internat'l Textb'k Co., 1932, 143 pp., $1.40.

PSYCHOLOGY

AN INTRODUCTION TO ANALYTICAL PSYCHOTHERAPY. By Thomas Arthur Ross, M.D. New York: Longmans, 1932, 210 pp., $3.50.

CHARACTER IN HUMAN RELATIONS. By Hugh Hartshorne. New York: Scribner, 1932, 381 pp., $2.50.

ECONOMY AND TECHNIQUE OF LEARNING. By William F. Book. Boston: Heath, 1932, 544 pp., $2.00.

GENERAL PSYCHOLOGY. By Floyd C. Dockeray. New York: Prentice-Hall, 1932, 581 pp., $3.50.

INDUSTRIAL PSYCHOLOGY. By Morris S. Viteles. New York: Norton, 1932, 670 pp., $5.50.

THE NATURE OF HUMAN CONFLICTS, OR EMOTION, CONFLICT AND WILL; tr. from the Russian and ed. by W. Horsley Gantt. By A. R. Luria. New York: Liveright, 1932, 448 pp., $4.00.

PRINCIPLES OF MENTAL DEVELOPMENT: A TEXTBOOK IN EDUCATIONAL PSYCHOLOGY. By Raymond Holder Wheeler and Francis Theodore Perkins. New York: Crowell, 1932, 555 pp., $3.75.

PROBLEMS IN HUMAN ENGINEERING. By Frederick Alexander Magoun, and others. New York: Macmillan, 569 pp., $3.50.

PSYCHOLOGY: ITS METHODS AND PRINCIPLES. By Fleming Allen Clay Perrin. New York: Holt, 1932, 348 pp., $2.00.

SOCIOLOGY

AMERICAN BUSINESS LEADERS: A STUDY IN SOCIAL ORIGINS AND SOCIAL STRATIFICATION. By Frank William Taussig and C. S. Joslyn. New York: Macmillan, 1932, 333 pp., $3.75.

THE INCIDENCE OF WORK SHORTAGE: REPORT OF A SURVEY BY SAMPLE OF FAMILIES MADE IN NEW HAVEN, CONN., IN MAY–JUNE, 1931. By Margaret H. Hogg. New. York: Russell Sage Found., 136 pp., $2.50.

EDUCATION AND TRAINING

HOW TO USE ENGLISH: A GUIDE TO CORRECT SPEECH AND WRITING. By Frank Horace Vizetelly. New York: Funk & Wagnalls, 668 pp., $2.50.

SCIENTIFIC METHOD: ITS FUNCTION IN RESEARCH AND IN EDUCATION. By Truman Lee Kelley. New York: Macmillan, 1932, 242 pp., $1.50.

Current Periodicals

PREPARED BY LINDA H. MORLEY, *Industrial Relations Counselors, Inc.*

AGE

ACHILLES, PAUL S. (Managing Director, Psychological Corporation, New York City). Salvaging old age in industry. *Industrial Relations*, July, 1932, vol. 3, p. 327–329.

Suggests possibilities for solution of the problem, citing researches by Thorndike, Miles, Strong, and Martin, psychologists, who prove that age discrimination is not justified.

ROGERS, THOMAS WESLEY (Assistant Professor, Industrial and Personnel Management, Indiana University). Older worker in industry, attitude and experience of 11 Indianapolis companies with the problem he presents. *Industrial Relations*, July, 1932, vol. 3, p. 353–357.

Survey conducted during 1931. Data was secured through interviews with personnel managers. The opinions expressed result from experience with a total of 14,000 employees. A majority of these personnel managers believe the older man is a problem, and there is a decided opinion in favor of the younger worker. Pensions, group insurance and workmen's compensation laws had little effect upon the opinion in favor of younger men. Most companies discriminate in age limits between older unskilled workers and skilled workers. Efficiency, physical qualities, adaptability, length of training period considered when hiring for both groups.

CONFERENCE METHODS

BOWERS, GLENN A. (Director of Study of Business Conferences, the Inquiry; Member, Personnel Committee, Niagara Hudson Power Corp.). Conference in management; showing how the open discussion of company policies is of benefit in business administration. *Industrial Relations*, Aug., 1932, vol. 3, p. 373–378.

In planning a company meeting Mr. Bowers gives, as essential things to consider, the type of meeting, its function, its immediate purposes, and the characteristic interest of its personnel. Suggests general rules regarding prerequisites and limits to committee consideration; formation of company committees and groups; designation of chairmen; functions of the secretary; discussion leadership, and follow-up.

GATES, A. B. (Director of Training, Eastman Kodak Co.). Conference methods and procedures. *Personnel*, Aug. 1932, vol. 9, p. 3–9.

Outlines necessary steps in preparing for and conducting a conference, and gives some of the possible uses for the conference method.

DISMISSAL WAGE

O'LEARY, JOSEPH (M. Ed., Department of Economics, Catholic University of America). Dismissal wage. *American Federationist*, Aug., 1932, vol. 39, p. 914–918.

Describes different methods of paying dismissal wages. The lump sum manner of payment is favored by majority of employers.

ECONOMIC CONDITIONS

BERRIDGE, WILLIAM A. Employment, unemployment and related conditions of labor. *American Journal of Sociology*, May, 1932, vol. 37, p. 903–909. (Abstract in Social Science Abstracts, Aug., 1932, vol. 4, p. 1278.)

Between 1930 and 1931 there was a 10 per cent decline in cost of living for fami-

lies of factory workers. The index of building employment was lower than for 3 previous years, while the trend of factory employment was continuously downward.

OLZENDAM, RODERIC (Metropolitan Life Insurance Co.). Some trends in social and economic thinking. *Special Libraries*, July–Aug., 1932, vol. 23, p. 269–280.

Gives briefly the opinions of Jane Addams, Dr. Butler, Stuart Chase, O. D. Young, Sir Josiah Stamp, Mr. Hoover, Gerard Swope, N. D. Baker, and other authorities on such questions as: Drift away from capitalism toward socialism; Equitable distribution of wealth; Industrial planning; Security for employees against sickness, unemployment, old age, etc.; Adoption of social insurance programs, etc.

ECONOMIC PLANNING

LINDEMAN, EDUARD C. (Professor of Philosophy, New York School of Social Work). Planning; an orderly method for social change. *Annals*, July, 1932, vol. 162, p. 12–18.

Presents eleven propositions in order to clarify the various aspects of the term "planning" but leaves to the individual a choice of procedures which bear some relationship to his actual experience and thus help him to move toward a planned society.

PATTERSON, ERNEST MINOR (President, American Academy of Political and Social Science; Professor of Economics, Chairman, Department of Economics, University of Pennsylvania). World economics. *Annals*, July, 1932, vol. 162, p. 170–180.

Recites the difficulties of evolving a workable world economic theory that will avoid wars and secure world prosperity, and then suggests the lines along which he thinks changes can be most hopefully undertaken.

PERSON, H. S. (Managing Director, Taylor Society). Approach of scientific management to the problem of national planning. *Annals*, July, 1932, vol. 162, p. 19–26.

"Scientific management stands for planning as essential to the regularization of a disorganized surplus economy; for a planning which is social rather than merely industrial; and for a social planning which makes its objective, production for measured demand at the least social cost, with individual profits as a by-product."

EMPLOYMENT DEPARTMENT RECORDS

Employment department records and forms. *Industrial Relations*, July, 1932, vol. 3, p. 324.

Lists a "complete" set of forms, excluding those used in medical or payroll departments.

EMPLOYMENT EXCHANGES

LIPPART, HARRY (Superintendent, Public Employment Office, Milwaukee). Responsible administration of a public employment office. *American Federationist*, Sept., 1932, vol. 39, p. 1003–1007.

Considers efficient personnel the most important factor in the operation of a successful office. Suggests college, or at least high school education with industrial experience, as desirable qualifications. Satisfactory office conditions, with separate departments, a central information bureau and cooperation from the employers, all help to make the employment office more valuable.

INCENTIVES

LOWRY, STEWART M. (Industrial Engineer, Procter and Gamble Co.). Wage incentives for the smaller industry. *Factory and Industrial Management*, Sept., 1932, vol. 83, p. 342–344.

Contending that motion study and wage incentives are just as desirable and applicable in the small plant as the large, the author points out that Gilbreth found years ago that there are in reality only 17 different hand motions and then sets up an outline for procedure, with the questions to be considered and investigated, in the preliminary survey.

INDUSTRIAL MANAGEMENT

Report of the second annual conference on management problems of the smaller

plants; the job ahead. *Factory and Industrial Management*, Aug., 1932, vol. 83, p. 301–312.

Digests of papers presented at the conference held at Silver Bay, N. Y., July 11–15, which stress the way in which the small plant can cope successfully with the depression. Public exchanges, health research, stabilization, advertising, compensation, incentives, budgeting, were some of the subjects discussed.

INDUSTRIAL RELATIONS

WALTERS, J. E. (Director of Personnel, Schools of Engineering, Purdue University). What's new in personnel work—1931 and 1932. *Personnel*, Aug., 1932, vol. 9, p. 20–31.

Compiled from answers received from 31 personnel men in representative industrial and business concerns. Eight companies added relief fund work; 9 companies reduced personnel departments, 19 did not, while 13 companies are not planning any additions. Hiring has decreased in all plants. Several outstanding foremen training programs which have been added are described in some detail.

LABOR PRODUCTIVITY

CUCICH, GEORGE N. (Statistician, Director of Research Bureau, Railway Employees Department, A.F. of L.). Shorter work day and productivity—a study of the effect of the one upon the other. *Industrial Relations*, Aug., 1932, vol. 3, p. 383–385.

Statistics are given to prove that while hours of work have been reduced, production has consistently increased, both in volume and in productivity per worker. Index numbers of productivity in shoe manufacturing and railroad transportation illustrate the truth of the statements over a period of years.

Man-hour productivity in the blast-furnace industry in 1929. *Monthly Labor Review*, Aug., 1932, vol. 35, p. 260–267.

Information received from plants producing 95.8 per cent of total blast furnace output in 1929, shows that plants with largest output of pig iron produced four times as much per man-hour as the smallest ones, and the wage cost per man-hour was slightly lower in small plants than large ones, but rate per ton was higher. A very close connection between efficiency and the horsepower classification was discovered.

MACHINERY IN INDUSTRY

Labor productivity and displacement in the electric light and power industry. *Monthly Labor Review*, Aug., 1932, vol. 35, p. 249–259.

Study covers 10 representative electric light systems, employing on an average 18,087 workers in 1930. There has been little displacement of labor in this industry. Where installation of new devices abolished positions, workers were absorbed, through the expansion of the industry, in other positions.

OFFICE WORKERS

ANDERSON, MARY (Director, Women's Bureau, United States Department of Labor). Clerical worker and industrial change. *American Federationist*, Sept., 1932, volume 39, p. 1024–1028.

Summary of reports made by Women's Bureau in 1931 and 1932 in Philadelphia and St. Louis, on working conditions of women office workers. Survey proved that introduction of machines has not caused displacement. Wages tended to decrease when operators were changed from hand to machine work. Median of all monthly salaries in all groups was $87 in St. Louis and $98 in Philadelphia. Highest wages were earned by those who had completed college training.

PSYCHOLOGY

MYERS, C. S. Some recent researches in Great Britain on the psychology of work. *Journal of the National Institute of Industrial Psychology*, Oct., 1931, vol. 5, p. 423–433; Bulletin of Industrial Hygiene, Jan., 1932, vol. 7, p. 15–16. (Abstract in Journal of Industrial Hygiene, Sept., 1932, vol. 14, p. 189–190.)

If work is presented in separate "blocks" rather than a long piece of work, and if rest pauses are introduced, an increase in

output will be noticeable. Studies proved that accidents are dependent on character, temperament, and mood; as well as abilities, experience and fatigue. Suggests that one must consider the entire personality of the person in the performance of work, not only his general abilities.

RATING

Measuring supervisory effectiveness. *Industrial Relations*, Aug., 1932, vol. 3, p. 394–395.

Suggests 8 ways in which control of judgment has been attempted in rating supervisors: 1. Order of merit (grading men according to ability); 2. Grouping (putting men in three grade groups); 3. Scott form of man-to-man comparison scale (master scale for each ability); 4. Scale of alternatives or two steps (judgment given "yes" or "no"); 5. Per cent scales (rates on basis of 100 per cent); 6. Linear scales (straight line drawn to represent range of ability); 7. Descriptive scales (phrases assembled to describe different grades of ability); and 8. Graphic rating scale (combination of last two mentioned).

SAFETY

Lauer, Alvah R. (Ph.D.; Department of Psychology, Iowa State College). What types of persons have accidents? *National Safety News*, Aug., 1932, vol. 26, p. 16–17, 64.

Describes these persons as "Ne'er do wells;" paranoic and hotheaded; the timid souls; drug addicts; insane; unintelligent; and those under mental and physical strain. Two age groups were found to be accident-prone; the older man who is losing out physically; and the commercial drivers between 23 and 24 who have never grown up. Studies have been concerned with accident-prone group.

Wilson, Gordon. Safety organization or safety rule books? *Personnel*, Aug., 1932, vol. 9, p. 15–20.

Suggests the safety rule books be "put to work," and not only read, but discussed at meetings. Specifies the four groups: administration, operating management, skilled workers, and unskilled workers, which must follow the principles of safety if accidents are to be reduced.

SELECTION OF EMPLOYEES

Beckman, R. O. (Director, Personnel Service, Psychological Corporation). Standardizing the selection of apprentices. *Journal of Business of the University of Chicago*, July, 1932, vol. 5, p. 228–240.

Considers establishment of co-operative employment research bureau, which would establish qualification requirements and study other problems in relation to apprentices, thus deriving statistical data which would be of aid in setting up definite standards. Such standards would involve application of psychological tests, and be supplemented by work interest and other data.

STABILIZATION

Raushenbush, Stephen (Director, Bureau of Industrial Relations). Stabilization in Pennsylvania. *Labor and Industry* (Pennsylvania), Dec., 1931; Jan., Mar., May, 1932, vol. 18, 19, p. 13–17; 4–16; 22–28; 24–28.

Series of articles describing the efforts which have been put forth to deal with the problem of stabilization in Pennsylvania. The regularization method of Leeds and Northrup Company; the suggestions made to manufacturers and union members in the upholstery industry; the report of the Interstate Commission of Governors of 16 states on unemployment insurance; and the possible effects of a minimum wage arrangement, are the subjects covered to date.

SUGGESTION PLANS

Dickinson, Z. Clark (University of Michigan). Suggestions from workers: schemes and problems. *Quarterly Journal of Economics*, Aug., 1932, vol. 46, p. 617–643.

The history of suggestion plans is outlined preliminary to an analysis, in both text and tabular form, of experience with such plans in 26 companies in which data for the years 1926–29 is compared with the depression year 1930. Factors of the analysis indicate both the quantity and

quality of suggestions received from men and women and from workers in different occupations and departments. The average payment per award, and lowest and highese awards, for each company are given. Names of companies are omitted throughout, establishments being designated by number.

The author, who has written more on this subject than perhaps anyone else, concludes that "there are 3 important conditions of employment to which suggestion plans are relevant; namely, grievances, discovery of employees worthy of promotion, and improvement of workers' services by enlistment of their interest and cooperation." His investigation indicates that the first 2 purposes can be better served by other personnel activities, but that the suggestion scheme does promote interest and improved work, especially if the opportunity for training and developing the skill of the suggestor is fully used in connection with each award and minor suggestion.

TRAINING

STEVENSON, JOHN A. (Vice-President, Penn Mutual Life Insurance Co.). What business expects from commercial training. *Personnel*, Aug., 1932, vol. 9, p. 11–15.

Efficient training in the type of work which a student expects to undertake on leaving school, a background of general information on business procedure, and the building of a foundation for the development of personal and social qualities which are essential for leadership, are the minimum requirements, as summarized by Mr. Stevenson.

TURNOVER

MOCKET, IRENE M. (Employment Manager (Women) Rowntree & Co. Ltd.). Aspects of labour turnover; 1, staff movements within the factory. *Labour Management*, July, 1932, vol. 14, p. 118–119.

Instead of hiring and laying off workers according to the fluctuation of work in the several plants and departments of Rowntree & Co., the girls are transferred on the basis of previous experience, physical fitness, and capacity for learning new work quickly. After selection, arrangements are made to have the girl properly received in the new department, and, after she is placed in work, a special trainer teaches the girl the best methods of doing the job.

UNEMPLOYMENT INSURANCE

HUEBNER, S. S. Unemployment insurance. *Proceedings of the American Philosophical Society*, 1932, vol. 71, p. 49–71. (Abstract in Social Science Abstracts, Sept., 1932, vol. 4, p. 1441.)

Author states that not more than 200,000 persons are covered by all plans. Summarizes six basic causes of unemployment, and stresses the almost complete neglect of any form of insurance in this country.

MUNTZ, E. E. (New York University). Analysis of the Wisconsin unemployment compensation act. *American Economic Review*, Sept., 1932, vol. 22, p. 414–428.

"Primary purpose of law is to bring about industrial planning, as a means of stabilizing employment . . . . it is so drafted as to preclude possibility of fusing unemployment insurance with public charity. Chief criticism of law is found in its application only to the larger employers, and in the relatively small reserves required per employee, which will limit its effectiveness."

UNEMPLOYMENT RELIEF

HUSS, E. G. (Director-General of the Swedish Social Board; President of the National Unemployment Commission). Organization of public works and other measures for relief of unemployment in Sweden. *International Labour Review*, July, 1932, vol. 26, p. 26–50.

The Swedish coordinated system of relief consists of State reserve works; communal reserve works and "assignable" schemes (public utility works which could not otherwise be undertaken). These various schemes provided relief for 33 per cent to 57 per cent of the unemployed registered with unemployment committees. The wages paid are lower than the lowest unskilled worker's wage at which there is demand in open market.

VOCATIONAL EDUCATION

REEVES, PERRY W. (Member, Federal Board of Vocational Education, Representing Labor), and FRANK CUSHMAN. Trends in vocational education. *American Federationist*, Aug., 1932, vol. 39, pp. 924–933.

Considers vocational education in some of its larger aspects; such as adult education, emergency service to unemployed workers; apprenticeship and continuation schools; day trade schools, etc. Believes an efficient program of vocational education would cost the public less than allowing workers to learn how to do a job by blundering along, without any real interest or pride in the work, and "failing on one job after another."

Eleventh Autumn Conference

Personnel Research Federation

THE Eleventh Annual Autumn Conference of the Personnel Research Federation, held November 17 and 18 at the Hotel Astor, New York, revolved chiefly around four timely topics: Occupational Trends, Adjustment Through Training, Personnel Policies During Business Recovery, and Recent Experiences in Public Employment Offices. Into the two days were crowded twenty-three addresses, nine round-table discussions, and a nationally broadcast radio program. Upwards of three hundred members and non-members attended these meetings. This number of the JOURNAL contains several of the papers presented. Others will appear in future issues.

The Conference opened with an address by Ralph G. Hurlin on "Some Occupational Changes from 1870 to 1930." Mary E. Pidgeon described changes which have taken place in occupations followed by women. Then followed a series of rapid-fire four-minute addresses on trends in specific occupations by speakers familiar with employment conditions in special fields: W. Carson Ryan, teachers; Lillian A. Quinn, social workers; E. D. Cray, office workers; H. L. Gardner, salesmen and sales managers; D. L. Hoopingarner, building trades; A. D. Flinn, professional engineers; Alon Bement, artists; and John Erskine, musicians. President David A. Robertson presided at this session. Leifur Magnusson, in opening the discussion, directed attention to the impact of world events on occupational trends.

The afternoon session met half an hour early to tune in on the radio program. Arthur W. Kornhauser, speaking from Chicago, addressed the group on "Workers' Motivation and Production." From the New York studio, Goodwin B. Watson, recently returned from a year abroad, spoke on industrial psychology in England, Germany, and Russia. Ordway Tead briefly told what personnel management is for and what its present problems are. The exhibit of new books, personnel record forms, and aids to individual diagnosis, and also the significance of the conference program, were described by W. V. Bingham.

"Adjustment Through Training" was the topic at the regular afternoon session. Morris S. Viteles told of methods used in the Philadelphia Electric Company for increasing proficiency and adaptability of new and older employees. Then, two addresses described the educational experiments of the Rochester Athenaeum and Mechanics Institute, in adjusting the training offered to specific needs. President Randall outlined the historical background of the Institute's

researches and its present program of fitting the curriculum to the occupational and cultural requirements of the students and of the industries and communities of Western New York State. W. W. Charters followed with a description of techniques by means of which the Institute's objectives are being reached.[1]

At this point the general meeting adjourned to several simultaneous round-tables. In one of these, C. R. Mann and R. W. Tyler led a lively discussion of the Mechanics Institute study. Another was devoted to examination of a study, now being carried on by the Federal Board for Vocational Education, on economic trends as affecting vocational education. N. B. Giles, representing the Board, described the study to the assembled vocational education specialists. The group was unanimous in the opinion that practical training programs for young people, as well as for adult workers, are essential to stabilization of employment, and that such programs will have to be organized and operated in coöperation with local industries in order to keep them properly adjusted to ever-changing conditions.

In a round-table on "Salary and Wage Differentials: What Do We Pay For?", the presiding officer, Margaret Elliott, made a statement of fundamental principles and introduced Charles H. Frazier, who led the discussion by describing the salary and wage classification plan of the Philadelphia Gas Works Company.

[1] The Mechanics Institute study will be fully described in a series of articles beginning in the April number of this JOURNAL.

Paul S. Achilles presided at a well attended round-table on "Personal Counseling in Business and Placement Offices." Much attention was given to scientific measures of aptitudes, interests, and personality traits, and their practicability as an aid to counseling.

The annual dinner meeting concluded the first day of the Conference. Virgil Jordan, Leo Wolman, and Walter V. Bingham spoke on different phases of the same topic, "Personnel Policies During Business Recovery." Henry Bruère, President of the Personnel Research Federation, presided.

Friday morning, November 18, was given over to "Recent Experiences in Public Employment Offices." The development, aims, and accomplishments of the Indianapolis Employment Bureau were described by its director, George E. Gill. From the Public Employment Center of Rochester, Willard E. Parker reported studies of the relative efficiency of various methods of making renewals and analyzed in detail procedures in dealing with orders and cancellations, while Mabel E. Crafts described studies made in connection with a program of follow-up of placements. Donald G. Paterson, of the University of Minnesota Employment Stabilization Research Institute, who was scheduled to conclude this session with an address on "Personnel Psychology and the Public Employment Office," could not come because of illness. He was ably represented, however, by M. R. Trabue. As Dr. Trabue did not speak from manuscript, he has supplied for this number of the JOURNAL a paper on "Occupational Ability Patterns," covering much the same ground as his

address. Questions raised in this forenoon session were debated throughout the afternoon in a round-table of public employment officials, presided over by Fritz Kaufmann.

In the general afternoon session, three topics were presented. Walter R. Miles reported on studies of changes in fundamental abilities throughout the life span, with special reference to the problem of older workers. L. J. O'Rourke spoke on "Industrial Standards as a Basis for Selection, Guidance and Instruction of Office Workers;" while Allan H. Mogensen demonstrated, with the aid of films, the practical usefulness of new developments in motion and time study. The general session then divided into round-tables, three of which continued discussion of the topics opened by the preceding papers. A fourth, led by Ordway Tead, dealt with the question, "Should Industry Spread Work?"

In the round-table on "Older Workers," led by Christian P. Segard, Solomon Barkin described some of the findings of an investigation made by the New York Commission on Old Age Security. W. H. Lange told of ways adopted by large employers for dealing with older workers; Millicent Pond submitted evidence, based on figures of average payroll age in good times and bad, indicating that older workers are not discriminated against so far as lay-offs during depression are concerned; and J. D. Hackett and Richard Cadbury commented respectively on the higher accident rates of older people and the greatly increased demand for state pensions.

W. E. Odom opened the round-table on "Measuring Aptitudes and Skills of Office Workers" with comments on Dr. O'Rourke's paper; while Adelbert Ford led the discussion of Mr. Mogensen's effective procedures for making workers "motion minded."

In approaching the difficulties faced by the share-the-work movement, Mr. Tead emphasized that from the research point of view there were two main problems: one, the question of operating policy for individual companies; and the other, the question of the broad economic and social effects of spreading work. The first problem absorbed most of the session. Frank W. Pierce, representing the Coördination Committee of the Share-the-Work Movement, stated that the Committee had been instrumental in preventing numerous lay-offs by spreading work. He emphasized that the method of applying the share-the-work principle must be worked out carefully in each particular instance, in order not to impair the living standards of those already employed. All agreed that spreading work is an emergency measure irrespective of the stand taken on long range policies as to reduction of hours, or on alterations in hourly rates of pay.

These round-tables brought to a close a timely conference of research workers, educators, economists, personnel executives, vocational counselors and placement officials, all vitally concerned about the occupational readjustments on which changing conditions have focussed the spotlight of attention.

Some Occupational Changes from 1870 to 1930

By Ralph G. Hurlin, *Russell Sage Foundation*

This paper describes some of the major occupational trends revealed by analyses of census statistics spanning the past six decades. The percentage of the population gainfully employed increased from 1870 to 1900 and has not changed greatly since. The percentage increase since 1870 of those employed in the various occupational groups is given. Greatest increase has been in clerical service, and the least in agriculture. The average age is steadily increasing in a majority of occupational groups.

THE purpose of this paper is to open this morning's discussion of occupational trends by calling attention to some of the major tendencies revealed by an examination of the census statistics of occupations spanning the past six decades. This is the period since the Civil War. It is the period of our great industrial and technological development and of tremendous urban growth. The seven decennial occupational censuses since 1870 have had similar scope, being intended to enumerate all persons of 10 years of age or over customarily gainfully employed, that is, customarily working for a wage or profit return; and since the censuses have been taken by essentially similar methods, the successive sets of statistics may be assumed to be approximately comparable, except as they are affected by frequent changes in the details of the occupational classification.

My first intention was to present for your examination a series of charts depicting occupational trends over this period, which were prepared for the President's Research Committee on Social Trends. Unfortunately, however, the committee's arrangement with the press concerning publicity for its now completed report prevents such reproduction of material contained in the report prior to January 2. I shall, therefore, refer you to the forthcoming report[1] for these diagrams and will here merely mention very briefly certain outstanding general tendencies, and at the end comment in particular on one trend, discussion of which was not developed in the committee's report but which has special significance for this meeting.

[1] Shifting Occupational Patterns. By Ralph G. Hurlin and Meredith B. Givens. Chapter 6 of *Recent Social Trends in the United States*, New York: McGraw-Hill, 1933. Inasmuch as the book has been published since delivery of the address, it was possible to include two of the charts in this article through the courtesy of the Committee on Social Trends and the publisher.

The census of 1930 records 48,830,000 gainfully occupied persons in continental United States, as compared with a total population of nearly 123,000,000. Of persons 10 years of age or over, the percentage gainfully occupied was 49.5. In 1870, with a population of 39,000,000, twelve and one-half million persons were recorded as gainfully occupied, or 44.3 per cent of those 10 years of age or over. The census figures indicate an increase in the proportion, both of total population and of population 10 years of age and over gainfully occupied during the early decades of the period. The figures are as given in table 1. Both sets of figures show increase from 1870 to 1910, but the figures for 1910 are probably somewhat too high because of over-enumeration of women and children in agriculture in that year. The declining proportion of children in the total population has important influence particularly on the percentages of the total population. Of the population 10 years or over, the percentage occupied in 1920 was almost identical with that in 1900. In brief, there was evidently an increase in the proportion of the population over 10 years of age which was gainfully occupied from 1870 to the close of the century, and apparently not great change in the proportion since. The figures appear to show a slight decline in the proportion of those over 10 years of age from 1920 to 1930, but in this connection it must be recalled that the census of 1920 was taken at the peak of an extraordinary period of industrial activity, whereas that of 1930 was taken six or eight months after business had begun the decline from which we are now suffering.

The most conspicuous occupational change revealed by the census figures is that to which attention has been frequently called, the shift, persisting over the entire period, from agricultural to other pursuits. The extraordinary decline in the relative importance of agriculture has probably been due chiefly to the technological changes in agriculture, but also in significant degree to technological changes in other industries which have resulted in divorcing from the farmers' occupation a large variety of productive processes formerly conducted on the farm, such for example as coopering and slaughtering, the fashioning of many sorts of home-made implements and the preparation of certain foods. The percentages of the total number of occupied persons of 16 years or over[2] who were engaged in agriculture in the successive decennial periods are as follows:

Per cent engaged in agriculture

1870	1880	1890	1900	1910	1920	1930
52.8	48.1	41.2	35.9	30.3	25.8	21.3

From comprising more than half of the working force of the country in 1870, agricultural workers have dropped to about one-fifth of the total force. Agriculture has not only lost ground relatively, but notwithstanding the great increase in population, the actual num-

[2] For several reasons, including the smaller reliability of the occupation statistics for children, we have used in the main in our study of occupational trends, statistics for workers of 16 years and over. In most cases the results are not very different from those which would be obtained by use of the data for all those recorded as gainfully occupied by the Census Bureau.

ber of persons engaged in agricultural pursuits has declined during the past two decades.

The relative decline in agricultural occupations has been accompanied by increases in other groups, but the most conspicuous increases have been among the white-collar occupations, including under that term the light indoor work in both offices and stores and also that represented by the professions and the near-professions. These groups of occupations have been growing steadily both actually and relatively, while machines have reduced the relative demand for the more laborious manual tasks both on the farms and in mines and factories.

The order of relative increase since 1870 of eight major occupational groups which can be traced by dovetailing the figures of the successive censuses is shown in table 2.

Clerical service, which was a very small proportion of the total gainfully occupied group in 1870, has increased at a consistently rapid rate over the entire period, representing 8.2 per cent of the total in 1930. Public service and professional and semi-professional service have also increased at rapid rates throughout the period. Together these three white-collar groups increased from 5.0 per cent of the total in 1870 to 16.1 per cent in 1930.

The change in distribution of the working population resulting from the widely differing rates of growth among the major groups is shown in table 3, which contains figures for 1870 and

TABLE 1

Percentage gainfully employed 1870–1930

	PERCENTAGE GAINFULLY OCCUPIED						
	1870	1880	1890	1900	1910	1920	1930
Of total population	32.4	34.7	37.2	38.3	41.5	39.4	39.8
Of population 10 years or over	44.3	47.3	49.2	50.2	53.3	50.3	49.5

TABLE 2

Persons 16 years or over in eight major occupational groups in 1930, and per cent increase since 1870

OCCUPATIONAL GROUP	NUMBER IN 1930 (IN THOUSANDS)	PER CENT INCREASE SINCE 1870
Clerical Service	3,935	1,809
Public Service (not elsewhere classified)	692	848
Professional and Semi-professional Service	3,110	820
Trade and Transportation	9,963	802
Mining	983	470
Manufacturing and Mechanical Industries	13,790	416
Domestic and Personal Service	5,448	367
Agriculture	10,242	59
Total gainfully occupied	48,163	296

for the last three censuses. Mining decreased in relative importance between 1910 and 1930. Manufacturing represents the same proportion of the total in these two years, while domestic and personal service increased very little.

In this connection, it may be pointed out that for the purpose of estimating trends, comparison of 1930 figures only with figures for 1920 is likely to be misleading in many instances because of the abnormal conditions obtaining at the time of the 1920 census. That census followed closely the war period. Demobilization of military forces was still incomplete and of the clerical army mobilized by the government for war service much less complete. Still more important was the frenzied industrial activity which resulted from the accumulated shortage of production during the war period and which called into industrial and clerical pursuits some workers who would not normally be gainfully employed and many workers from other occupational groups. As a result, some occupational groups show expansion in 1920 which is out of line with the trend, and a compensating decline or reduced rate of increase in 1930; while other occupational groups show the reverse. The major groups showing more or less of this abnormal expansion in 1920 are public service, clerical service, mining, and manufacturing. Those showing temporary decline from their trend lines are domestic and personal service (conspicuously), trade and transportation, and professional service. Sociologists were widely misled in interpreting the 1920 occupation figures for the domestic and personal service group as indicating a permanent drastic shift in the demand for these services. The 1930 figures, however, suggest that the decline shown for this group in 1920 was chiefly due to the marginal character of these occupations and the competition resulting from the expansion of other groups, or in other words to a temporary shortage of the labor supply.

TABLE 3

Percentage distribution of gainfully occupied persons 16 years and over in 1870, 1910, 1920 and 1930

OCCUPATIONAL GROUP	1870	1910	1920	1930
Clerical Services	1.7	4.6	7.2	8.2
Public Service (not elsewhere classified)	0.6	1.1	1.6	1.4
Professional and Semi-professional Service	2.7	4.8	5.4	6.5
Trade and Transportation	9.1	17.4	18.0	20.7
Mining	1.5	2.6	2.7	2.0
Manufacturing and Mechanical Industries	22.0	28.6	30.5	28.6
Domestic and Personal Service	9.6	10.6	8.8	11.3
Agriculture	52.8	30.3	25.8	21.3

An outstanding trend has been the great increase in the importance of women as gainful workers. In 1870, women constituted but 14.8 per cent, or less than one-seventh, of the total number of gainfully occupied persons of 16 years or over; whereas in 1930

women represented 22 per cent, or between a fifth and a quarter, of the total group. But of the trends respecting women's occupations another paper will deal.

While gainfully occupied women have been increasing relatively, gainfully occupied children, at least as enumerated by the Census Bureau, have been declining in importance, and since

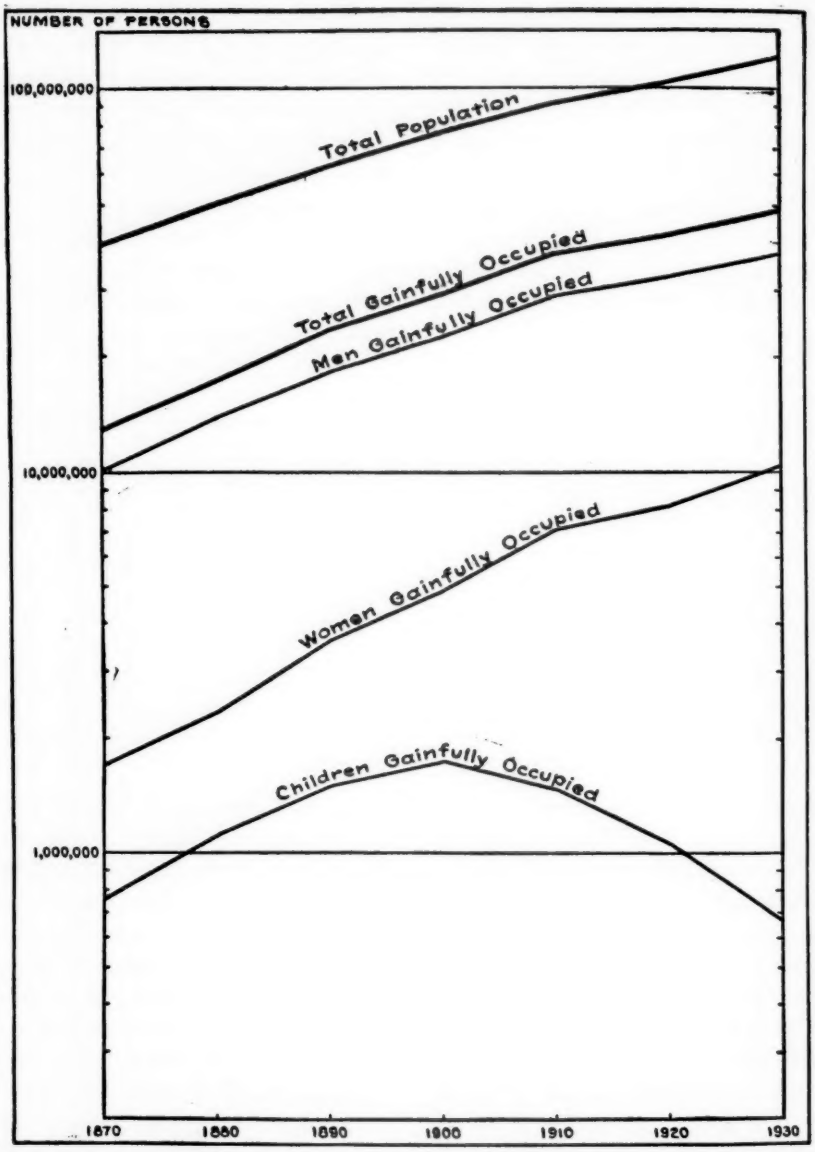


FIG. 1. GROWTH OF TOTAL POPULATION IN THE UNITED STATES AND OF POPULATION GAINFULLY OCCUPIED. 1870 TO 1930 (RATIO SCALE)

1910, or perhaps since 1900, if allowance is made for probable over-enumeration of children in 1910, the actual number of children gainfully occupied has declined. In 1870, children of from 10 to 15 years of age constituted 5.9 per cent of all gainfully occupied persons, and in 1930 only 1.4 per cent of all the gainfully occupied. In 1930, children were most important in the agricultural group, representing there 4.4 per cent of the total. In domestic and personal service, clerical service, trade and transportation, manufacturing, and mining, children represented in 1930 less than one per cent of the total group, while in public and professional service their number is negligible.

Perhaps the most important trend for the consideration of this meeting is the tendency toward an older average age of the working population. This is an accompaniment of the aging of the general population. With reduction of both death and birth rates, the productive capacity of the total population has gradually increased. The proportion of persons of productive age, say from 16 to 64 years, has increased steadily from 1870 to 1930, but more rapidly in the last decade than earlier. This age group was 55.7 per cent of the total in 1870, 59.5 per cent in 1900, and 63.4 per cent in 1930. The considerable increase in the portion of the population of productive ages has undoubtedly meant a crowding and increased competition in many occupational groups. It is an important factor explaining the increasing average age in a majority of specific

TABLE 4

Number of persons 16 years or over in selected occupations in 1930, and per cent 45 years or over in 1890, 1910 and 1930

OCCUPATIONAL GROUP	NUMBER IN 1930 (THOUSANDS)	PER CENT 45 YEARS OR OVER		
		1890	1910	1930
Clergymen, religious and welfare workers	211	46	45	51
Lawyers, abstractors, notaries, etc.	172	38	41	44
Physicians and attendants	188	42	38	48
Dentists	71	28	23	36
Teachers	1,125	8	11	17
Architects	22	24	29	36
Musicians and teachers of music	165	14	16	26
Artists and teachers of art	57	18	25	27
Chemists and metallurgists	47	23	16	17
Photographers	39	19	24	33
Designers, draftsmen and inventors	103	21	12	17
Bookkeepers and accountants	930	13	11	15
Stenographers and typists	810	1.9	1.6	3.4
Telephone, telegraph, and radio operators	321	3	5	9
Barbers, hairdressers and manicurists	374	12	17	25
Salesmen and saleswomen in stores	1,980	10	15	21
Clerks in stores	397	—	9	14

occupational groups, and this tendency, moreover, is likely to continue for several decades at least, as the prophesied stationary population is approached.

The extent of this aging tendency in a variety of occupations, including several which will receive special consideration later in this program, is indicated in table 4. The percentage figures of the table show the proportions which those over 45 were of the total in each group in 1890, which is the first year for which this age comparison can be made, and in 1910 and 1930. Most of these occupational groups show large increases in the proportion of older workers.

It may be remarked that these are occupational rather than employment figures and that with the increasing proportion of older persons in the population, the occupation figures contain an increasing proportion of older workers who though claiming an occupational status are no longer actively engaged in their occupations, or in short, that the occupation figures are padded by the inclusion of obsolescent workers and that this is the explanation of the increasing proportion of older workers in many groups. In some instances this may in a measure be true, though how frequently and to what extent it is difficult to estimate. In this connection it should be borne in mind that the census enumerator's returns of gainfully occupied persons have for several decades, at least, been carefully edited, and that in 1930 persons shown by the additional information concerning unemployment to have been long out of work were regarded as no longer normally gainfully occupied.

It is unnecessary to discuss each of the groups in this table. The figures for the large group of teachers are perhaps most striking. In 1890, only 8 per cent of the teachers were over 45, as compared with 17 per cent in 1930. Of musicians, 14 per cent were over 45 in 1890, and 26 per cent in 1930. Of barbers, 12 per cent were over 45 in 1890, as compared with 25 per cent in 1930. Some of the occupations included in the table show a reversal of trend in this respect over the 40 year period. The proportion of older dentists declined from 1890 to 1910 but increased from 1910 to 1930, and this is true also of the physicians. On the other hand, the chemists and metallurgists, who have increased very rapidly during this period, show a marked decline in the proportion of older members of the group from 1890 to 1910 and very little increase from 1910 to 1930.

Stenographers and typists represent an occupation in which there is a special premium on youth, and in each of these years the proportion of older workers is very small for this group. Even here, however, the proportion has increased. Among salespeople also there has been notable increase in the proportion. The group, clerks in stores, at the end of the table has been included, since it is not very clearly distinguished from that of the salespeople, in order to show that it resembles the related group in this respect.

In so far as the increasing proportion of older workers in specific occupations is explained by a longer average worklife on the part of the members of the group, it means that there will be

smaller relative demand for recruits to the occupation. This is a factor which needs to be taken into account especially in the case of the professions and other occupations requiring extensive technical training. Thus, other things being equal, relatively fewer physicians or dentists will need to be

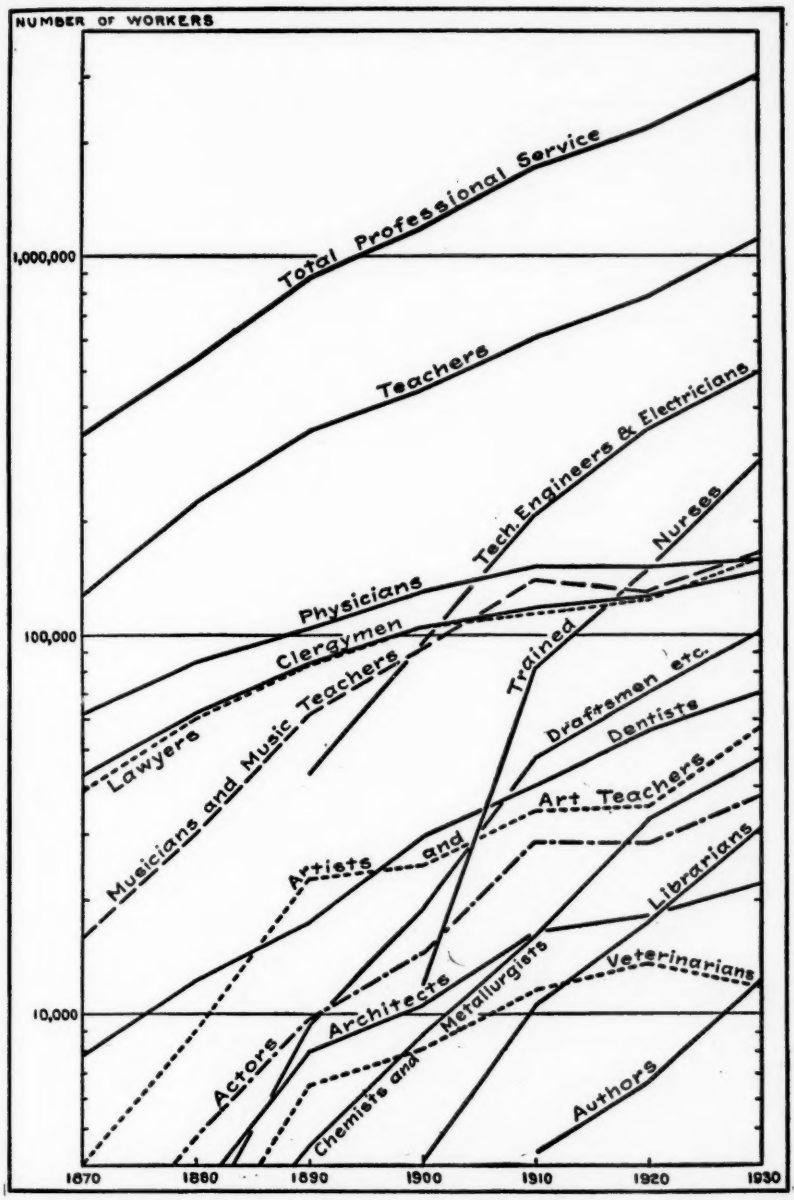


FIG. 2. GROWTH OF SELECTED PROFESSIONAL SERVICE GROUPS. 1870 TO 1930

trained if the average physician or dentist is tending to practice longer.

The age data for occupations are perhaps most interesting, however, as suggesting that workers are not disappearing from the labor market at middle age. Thus, the proportion gainfully occupied of all persons 45 years or over in the population was about 52 per cent at each census since 1890. The proportion gainfully occupied has increased among those of from 45 to 64 years, from 55.5 per cent in 1890 to 58 per cent in 1930, but has declined for those over 65 years, from 42 per cent in 1890 to 33 per cent in 1930. But to say that the proportion of older persons between 45 and 65 years who are normally gainfully employed has increased, does not, of course, mean that the older worker is not at a disadvantage as compared with younger workers. On this point the census figures throw no light.

Recent Changes in Occupations of Women

By Mary Elizabeth Pidgeon, *Women's Bureau, U. S. Department of Labor*

Census figures were analyzed to find trends in the kinds of work women are doing. Employment of women increased 26 per cent from 1920 to 1930. Since 1880 the number of women employed in domestic and personal service has not quite trebled, while in manufacturing occupations it is 3 times, in the professions almost 9 times, in trade 18 times, and in clerical 268 times the number reported 50 years ago.

AT THE time of taking the Census of 1920 and thereafter, much was said relative to the new avenues of employment that had been opened to women during the war period. There is no doubt that the fluid psychology of the era did result in an increased open-mindedness toward the capacities of women and toward the suitability of entering types of work that they formerly had not engaged in, or that had been considered unusual for them.

Despite these facts, the 1920 census figures showed an increased woman employment of only 5.9 per cent over that of 1910, while in the same time the woman population 10 years of age and over had advanced considerably more —17.1 per cent.

INCREASE IN NUMBERS OF EMPLOYED WOMEN

Persons interested in the subject and cognizant of the phenomenal activities incident to the war eagerly awaited the 1930 data, questioning whether the growth in woman employment had continued as rapidly as before. It scarcely was expected that the acceleration would be so marked as in fact it is. The 1930 figures added more than 2,200,000 women to those employed in 1920, an increase of 25.8 per cent, while at the same time the woman population 10 years of age and over had increased only 20.6 per cent (21.8 per cent if only age 15 and over be considered). Of all employed persons 22 per cent are women. This also has shown a decided increase from 1920 to 1930—about 7 per cent.

However, since in the decade preceding 1920 the increase in woman population had so far outrun the increase in women gainfully employed, the population increase over the 20-year period from 1910 to 1930 (which was 41.2 per cent) considerably exceeds the 20-year increase in woman employment of 33.1 per cent. Going still farther back, over the 50 years to 1880, it is found that in every decade thereafter, except 1910–1920, the proportional increase in employment of women exceeded their population gains in a degree considerably greater than was the case in 1930. Coupled with the fact that the population increase over the 50 years has shown a fair

degree of regularity, this would seem to point either to a slowing up of the entrance of women into occupations or to the approach of a saturation point in the absorption of women into employment. Further color is added to this statement by the fact that the proportion of all women who were employed in 1930, while it was somewhat above that of 1920, as has been stated, actually was slightly less than in 1910.

The male population had increased 18.1 per cent from 1920 to 1930—less than had that of women—and their employment only 15.2 per cent as compared with women's 25.8 per cent, though it must be remembered that the number of men employed is very much greater than that of women, so that their numerical increase in employment in the decade has been over twice as great as that of women.

In the presentation of so brief a paper, it will not be possible to enter into detail as to many particular occupations, but only certain of the more outstanding main occupational movements, with some suggestion of their relative significance, can be dealt with.

BASIC ECONOMIC CURRENTS

The changed and changing modes of life, the increased costs of living, the availability of goods in wide variety, the heavy pressure of salesmanship, the increasing demands of life in a highly intricate society, the partial liberation of women from the older types of household labor that often represented unorganized drudgery—these are among the basic economic currents that have carried women more and more into gainful employment. The type of their contribution to the life of the nation has been changed entirely, and the order of society that has developed has had quite a definite effect in forcing large numbers of women to bring to the family exchequer their share of the wealth that must buy the kind of goods now needed for the family upkeep.

WOMAN AS AN ECONOMIC UNIT

Among the more outstanding facts that indicate the shift in the method by which each individual must maintain his or her place as an economic unit in the family is the growth in the employment of married women. In 1930, 11.7 per cent of the married women were employed as against 9 per cent in 1920. Despite some advocacy of opposing the inevitable forces of the time in this respect, this is a movement that undoubtedly is bound to continue so long as the economic and occupational tendencies that have developed maintain their present direction.

AGRICULTURAL AND NON-AGRICULTURAL PURSUITS

One of the most striking illustrations of the radical change in our national economy that has occurred in the 20 years just past, lies in the shifted relationships of the agricultural and non-agricultural occupations as employers of women. While workers of both sexes have relinquished agricultural occupations, the proportional decline is the greater for women. From 1890 to 1910 women were entering agriculture more rapidly than the population of their sex was growing. In 1910 agricultural pursuits were third in the gainful employment of women, in 1920 they had dropped to fourth, and in

1930 to sixth place as woman employers. The entire decline in the past 20 years has been 49.6 per cent, the number of women in these pursuits in 1930 being fewer than in 1910 by nearly 900,000. Meanwhile, the woman population had increased by 41.2 per cent and an additional 3,500,000 had engaged in non-agricultural work, an increase of 57 per cent from 1910 to 1930.

EMPLOYMENT OF WOMEN IN MANUFACTURING AND MECHANICAL INDUSTRIES

Incident upon the decline in agricultural work and the shift from the age of simple home manufacture to large scale factory production that has continued over a long period, has been the increase in demand for manufactured goods, a demand accelerated also by the invention of new processes and the mechanical possibilities of extending higher living standards to more people. The effect of this increased demand upon employment may have been somewhat minimized by the introduction of mechanical processes enabling mass production. The manufacturing and mechanical industries, which from 1880 to 1920 had held second place as woman employers, dropped to third place in 1930, although still employing almost as many as were in the occupational group now taking second place —the clerical.

Though the employment of women in manufacturing and mechanical industries has declined in the past decade, and has increased less than 4 per cent since 1910, this decline has been in occupations ordinarily pursued outside of factories, in which woman employment has declined about 129,000. The bulk of this decline has been in the skilled sewing trades formerly carried on in the home and employing large numbers of women—for example, dressmaking and millinery (including millinery dealers)—which have declined to the large extent of about 33 and about 42 per cent, respectively, from 1920 to 1930, and in each case well over 60 per cent since 1910.

On the other hand, women in factory employment increased 5.6 per cent, men 5.5 per cent, and the increased demand for factory-made goods is evident in such substantial numerical increases in the employment of women operatives as those in plants producing clothing, electrical machinery and supplies, food products, shoes, knitwear, and automobiles.

EMPLOYMENT OF WOMEN IN DISTRIBUTION OF GOODS

Consideration of the growth in employment of women in trade would seem to indicate an increased emphasis in the occupational field toward distribution. The facility for mass manufacture and the added demand for factory goods, together with a highly organized system of money and credit, has created an enormous potentiality for wide dissemination of goods, and this fact is reflected in the increased employment of women in trade, and in some part of the clerical increase. Each of these main occupational divisions showed roughly a 40 per cent gain in the decade, though in neither (except for trade in 1920) was the proportional gain so great as in any previous decade in the last 50 years.

The trade group has shown a larger proportional increase in the past 50 years than has any other except the clerical, and a proportional increase in the past 20 years greater than in three of the five other important woman employers. Nearly three-fourths of the women employed in trade in 1930 were saleswomen or "clerks" in stores, and these had increased 34 per cent from 1920 to 1930. This increase is somewhat smaller than for the trade group as a whole (43.3), since practically every other employment in the group showed a very high rate of increase. The numerical growth in trade was almost 50 per cent greater in the decade 1920 to 1930 than in the decade 1910 to 1920. While a future advance always is problematical, the present attention to distribution, the potentialities of rapid manufacture of goods, and the very evident need of their wider dissemination point toward at least a continuation if not an acceleration in the availability of trade occupations for women.

WOMEN IN PROFESSIONAL PURSUITS

Another factor in the occupational situation of women in America has been the continuing development in the opening to them of opportunities for education. The results of this are reflected in their growing employment in professional and clerical work. In 1930, the professional service group showed a 50 per cent increase, greater than that in any other of the six more important woman employers, and considerably greater than that recorded in 1920. Most of this increase represented actual professional persons as against those in semiprofessional pursuits, while the per cent increase was especially great among the attendants and helpers—many of whom may be actually in training for full-fledged professional activities. Both numerically and proportionally the increase in professional persons was greater for women than for men, while among attendants and helpers the opposite is true and the contrast is striking. About three-fourths of the women in professional service were either school teachers or trained nurses. In the last 20 years as well as in the last decade, while women in the teaching profession have increased rapidly, their proportional increase has been less than that in the entire professional group and very much less than that of trained nurses. The advance of women in this type of work appears to be yielding place to that in other professions that formerly have been of less numerical importance as woman employers, though there are evidences that the occupation of trained nurse may be approaching a saturation point.

In the professional group, aside from teachers and trained nurses, the greatest numerical increases had been among librarians and college presidents and professors, to each of which groups more than 10,000 women had been added, an increase of approximately 100 per cent. Although the proportional increases in these occupations were greater for women than for men, the number of additional men college presidents and professors exceeded that of the women and the total number so occupied in 1930 still was over twice as great for men as for women.

Other professional occupations showing considerable numerical increase for

women were actors and showmen; artists, sculptors, and teachers of art; authors, editors, and reporters; and musicians and teachers of music. However, despite the growth of women in these professions, in most cases much larger numbers and proportions of men than of women were added to them.

WOMEN IN CLERICAL OCCUPATIONS

Another group representing a definite product of increased educational facilities is that of clerical workers, which shows a very much greater expansion in the last 50 years than any other, employing now 268 times as many women as in 1880. These occupations rose from sixth place as employers of women in 1880 to fifth in 1890, held this position in the next two decades with 115 per cent increase or more in each, rose to third place in 1920 and now occupy second place, containing nearly 2,000,000, and having increased since 1920 by over 550,000. Yet it is perhaps reasonable to suppose that this type of occupation scarcely can continue to expand at the rapid rate of the past, and indeed there is indication that the saturation point already has been reached. While the increase in 1930 was nearly 40 per cent, that in 1920 was 141.6 per cent, after a proportional expansion since 1890 that was greater in each decade than in the one preceding, The increase in 1930 was less by nearly 270,000 than was that in 1920. Office clerks and stenographers and typists formed about three-fourths of the clerical group in 1930, and in each of these occupations the numerical increase in the past decade was nearly one-third less than that recorded in 1920.

In professional service, the orientation of the age would seem to present factors that might be expected to favor and abet the continued steady growth of women to the extent that they put forth the effort to obtain adequate training, though there is some evidence that newer occupations may offer more opportunity in the future than will certain of those traditionally engaged in by women. In connection with clerical pursuits, on the contrary, there appears on the horizon little in the way of new concrete factors that would induce an expansion so phenomenal as in the past.

WOMEN IN DOMESTIC AND PERSONAL SERVICE

One traditional occupational group that has employed a larger number of women than any other in every decade yet remains to be considered—domestic and personal service. This group showed a larger proportional increase from 1920 than any of the other chief woman employers except the professional. But this was incident upon a decline from 1910 to 1920 and in order to understand it more fully, a longer background should be examined. The increase was about one-fourth both in 1900 and in 1910; the 20-year increase from 1910 to 1930 was practically the same and was considerably less than half that in either of the two earlier 20-year periods, 1880-1900, 1890-1910. Consequently it scarcely can be said that the apparent great increase in this group represents any unusual shift toward this occupation, which is of a type traditionally pursued by many women. Indeed it is evident that over a long-time period the employment of

women has tended in other directions than toward this group, for since 1880 the number here employed has not quite trebled while in manufacturing occupations it is 3 times, in the professions almost 9 times, in trade 18 times, and in clerical 268 times the number reported 50 years earlier. About one-half of the group are servants, nearly 90 per cent of whom are estimated to be in private homes. Just under half of the entire domestic and personal group are native-born white women. Over one-third of the women employed in these occupations are negroes, and no others except the agricultural groups have absorbed so many of this race. Over 60 per cent of the employed negro women are in domestic and personal service.

SUMMARY

Finally, in brief summary it may be said that many complex and deep-lying economic factors, operating in a steady stream, now accelerated now retarded by cross-currents of one type or another, are producing continual changes in modes of life and standards of living. These are reflected in the changing occupations of women and the changing attitudes toward gainful work for women. In recent decades they have removed women quite definitely from the stage of home production and, more recently, from the predominance of agricultural pursuits. As domestic and personal workers, women's employment shows a rather ordered advance, but with a very marked decline from 1910–1920. As factory employees it has advanced at the expense of the hand trades formerly pursued in the home. In clerical work the advance in the past 50 years has been more rapid than in any other group, but a saturation point probably has been approached at this time. The employment of women in trade shows definite forward movement with indications of continuation. In professional work it shows steady advance, which, if not always so rapid as desired, is especially notable in the more recent period and appears to give considerable promise for the future, especially in certain of the professional occupations less traditionally employers of women. One thing is sure: Woman, who always has taken her place as an economic unit, regardless of marital status, still is maintaining that place, though her contribution to the economic life of the country now is being made in new and ever changing ways corresponding to the shifts of one type or another that continue to occur in these moving times.

Adjustment in Industry Through Training

By Morris S. Viteles, *University of Pennsylvania and Philadelphia Electric Company*

Training is a prominent personnel activity, but has been generally limited to new employees. There are many reasons for training experienced workers. Some fail to keep up with improved methods; they stagnate. Experience has shown that older workers can and are willing to learn. Training for related jobs is an effective form of unemployment insurance in the event of technological change (which often can be foreseen) and economic depression. The Philadelphia Electric Company's thoroughgoing program of training of experienced employees is described. Underlying principles in training are given.

A SURVEY of modern personnel practices shows that systematic training occupies a prominent position in the calendar of personnel activities.[1] It is recognized that training is among the principal factors in increasing efficiency and in improving individual adjustment in industry. A well-organized training program, based on a sound analysis of the job and applying well-established learning principles, enables the worker to employ the most effective methods in the performance of his task. Systematic instruction speeds the rate of acquisition of skills and thereby reduces the time required for training. Shortening the training period not only decreases the cost of instruction, and incidental waste in the form of spoiled material, overhead on machines, etc., but serves to increase the stability of the working force and the satisfaction derived from work, particularly in the case of highly specialized tasks of modern industry.

[1] J. H. Greene, *Organized Training in Business*, New York, 1928; N. Peffer, *Educational Experiments in Industry*, New York, 1932.

THE NEGLECT OF EXPERIENCED EMPLOYEES

For these reasons it has been the practice of industry for many years to extend the benefits of such training to new employees as they are placed in the company pay-roll. The insistence of Taylor, Gilbreth and other early exponents of scientific management upon the importance of instruction, and their success in using training as an aid to increasing production first helped to awaken a recognition of the value of systematic training in developing and maintaining an efficient and satisfied working force. Experiments in the psychological laboratory and in industry, involving a comparison of diverse training techniques showed further that the training program is of utmost importance

in the development of proficiency—and strengthened the position of the training function in the personnel organization.[2] At the same time, in the administration of this function a curious situation has arisen in many industrial establishments. The dominant practice of limiting training to new employees has created a condition in which groups of employees with relatively short periods of service often have more information, are more dependable, and are capable of functioning more efficiently than groups with longer service periods. This situation may easily arise when the first group has been granted the benefit of systematic instruction not made available to the latter by reason of their length of service.

There have been many reasons given for this neglect of the man already on the job. The first is the "apparently obvious" reason that experienced men need no training, that experience itself more than counterbalances the advantages of a systematic presentation of operating principles and of approved operating practices. Perhaps equally frequent is the excuse that men on the job cannot be taken from their work for instruction purposes—that operating demands are incompatible with demands of systematic instruction—even where the need for this is recognized. Added to these is the wide-spread conviction that learning ability deteriorates rapidly, and that the instruction of men beyond their prime (with prime placed somewhere around the forties) is therefore subject to little return in the way of increased proficiency. Other reasons are also given: the fear of resentment on the part of experienced employees submitted to an instruction program; the cost of personnel employed in the administration of an all-inclusive training program, etc.

[2] M. S. Viteles, *Industrial Psychology*, New York, 1932, Chapter XIX and XX, pp. 393–438.

REASONS FOR TRAINING EXPERIENCED WORKERS

Recent events have clearly demonstrated the fallacy of these reasons. The reduction of force imposed by the economic depression has been one factor in this revelation. The supervisor and the personnel manager, forced to cull the payroll for lay-offs, discovered only too frequently that experience and length of service give no sure index of superior ability to perform on the job. There has been a failure on the part of experienced workers to keep pace with changing methods of work. Old viewpoints and old methods of work have become firmly established and have set up resistance against replacement by improved methods of work. This results, in part, as Eliott Smith[3] has pointed out, from stagnation on the part of the worker. It follows also, in large measure, from the failure of management to keep before the permanent working force the importance of change, of continued learning as a necessary factor in adjustment to work in modern industry, and from the failure to provide for such workers the opportunity for systematic instruction

[3] E. D. Smith, *What are the Psychological Factors of Obsolescence of Workers in Middle Age?* Am. Man. Assn., Personnel Series, No. 9, 1930, pp. 1–2.

in improved practices and in the principles underlying such practices. These factors have forced upon the supervisor and the employment manager the embarassing situation of having to lay-off, because of inefficiency, workers with 10, 15, or 20 years of service, or to retain them—for humane reasons—in spite of the loss forced upon a firm which could carry such additional burden only with great difficulty.

The belief that learning ability deteriorates rapidly among adult workers has also received a severe blow. The findings of recent studies of learning by adults have shown that such difficulty as the older worker may have in learning new methods of work follows not primarily from a decline in learning ability, but from an atrophy of acquired learning habits as a result of disuse.[4] The evidence from diverse studies of old age shows, as Smith has indicated, that the failure of middle-aged and older workers in the plant to meet the demands of modern industry is not primarily due to the effect of advancing years. "Practical experience confirms the results of the psychological laboratory that the principal effect of the passing years is that they provide an inescapable exposure to the influence of what a man does and experiences as the years pass. The power of men *to continue to acquire and to develop habits* gives to increasing years the opportunity to offset any slight decline in faculties or change in temperament which might occur, by increasing skill, information, seasoned judgment, and personality qualities adapted to the requirement of his circumstances. But the same power also gives to the passing years the opportunity for learning powers to fall into disuse and atrophy, for undesirable habits of thought, action, and personality to form, harden, and to escape from conscious control or even conscious recognition."[5] The nature of the middle-aged or older man is thus essentially dependent upon what he does with the years, and upon the opportunities provided by industry for keeping his learning ability alive and active.

Reference has also been made to another factor which has interfered with the systematic training of experienced workers—the difficulty of fitting training time with working time. This is a real difficulty, but experience has shown that it is far from unsurmountable. Operating costs for the instruction of experienced workers can also be kept within very reasonable bounds. Insofar as the resentment of experienced workers to additional instruction is concerned, experience has shown that the problem is imaginary in character. It simply does not exist where employees are completely informed of the purpose of the training program and where, as is true in organizations with sound personnel policies, workers possess confidence in the integrity of the management. As a matter of fact, in Philadelphia Electric Company, where training of experienced workers has become an established policy, employees in the higher

[4] See H. L. Hollingworth, *Mental Growth and Decline*, New York, 1927; H. Sorenson, Adult Ages as a Factor in Learning, *J. Ed. Psych.*, 21, 1930, p. 459; E. L. Thorndike, *Adult Learning*, New York, 1928.

[5] E. D. Smith, *op. cit.*, p. 3.

brackets of the generating stations originally excluded from training programs have made formal requests to be given such training. These men, including highly experienced operators and electrical mechanics, have displayed unsurpassed enthusiasm in the development of the training programs organized for their benefit. It is interesting to note that these men were originally excluded because of the fear expressed by members of the supervisory force that such highly skilled and experienced men would express resentment at being included in a training program.

Personnel problems created by the depression and by technological changes, combined with the changing viewpoint concerning the learning ability of older workers, lend new importance to the instruction of experienced workers as an aid in promoting the continued adjustment of the worker in the industrial situation. Industry may maintain its efficiency by scrapping the older worker, but to do this represents a sacrifice of the sense of responsibility for the individual worker which has become a vital part of the progressive industrial organization, as well as of the proven reliability and accumulated experience of men with long years of service. It shows a neglect of the central principle of scientific personnel work which, as Feiss[6] has pointed out, "includes not only the selection of new employees but also keeping every position in the organization permanently filled with the right kind of man or woman." In this sense transfer and retraining of workers already employed in the organization are at least as important in fitting workers to jobs as hiring and training new workers. Provision for training and transfer becomes particularly important in times of economic depression, when it is necessary to shift personnel within the organization as a means of retaining employees with long years of service. The rapid replacement of men by machines also makes necessary an emphasis on these techniques as a means of ensuring the adjustment of the worker and stability of the plant and of the entire social body.

Training of experienced employees represents a major step in accomplishing these objectives. Such training involves first of all the instruction of each employee in the best practices of the job which he is now holding. To this must be added, wherever possible, instruction in the principles and practices of the job to which he can most easily be transferred in cases of the replacement of his job by machines, of changes in company practices, or in periods of temporary economic depression.

The application of this policy may mean, for example, that meter readers will not only be trained in the most improved practices of meter reading, but will receive detailed instruction in the work of the bill collector,—the job to which meter reading is most intimately related on the organization chart. Ground-men in line construction and maintenance gangs will be taught not only pole-setting, but splicing, transformer installation and

[6] R. A. Feiss, Personal Relationship as a Basis of Scientific Management, *Annals Amer. Acad. Pat. and Soc. Science*, 65, 1916, p. 130.

even trouble-shooting, in order to provide greater mobility of the individual and of the crew under varying conditions. D-C station operators will be taught the principles and practices of A-C operation as a step in adjustment to prospective change-over from one to the other. Employees in traditional coke gas-making plants will become acquainted with the reformed oil process, in preparation for the day when a shift in operating practice will reduce the demand for one type and create a demand for the other type of gas production.

PHILADELPHIA ELECTRIC COMPANY TRAINING PROGRAM

This program may sound visionary, but the experience of one company at least—the Philadelphia Electric Company—has shown this to be far from true. In actual practice the training program for experienced workers must be oriented as a job-insurance program in which the individual experienced employee, by acquiring wider knowledge and greater skill in the performance of his present job, and by acquiring knowledge and skill in certain related activities, increases tremendously the probabilities of continued employment in the face of administrative, technological, and broader economic changes. In many ways the benefits of such job insurance are superior to the more common form of insurance adopted as a measure of relief in periods of unemployment.

Although similar programs exist in other organizations, recent developments in training in Philadelphia Electric Company may be cited to illustrate the variety of occupations which such training may involve, and the principles which may be employed in creating procedures that will permit the economic administration of systematic instruction for experienced workers.

At the present time close to 1000 employees of Philadelphia Electric Company, with length of service extending in some instances beyond twenty years, are enrolled for training in a variety of courses. Cleaners, excitermen, helpers, electric mechanics, assistant operators and operators in the electric plants of the generating stations are receiving detailed, practical instruction in station operation. Employees in gas production plants, ranging from foremen to laborers, are carefully reviewing every step involved in the water gas and reformed oil processes. This program will be supplemented by training in gas distribution. A group of service maintenance men (troublemen) have embarked on a thoroughgoing review of line and station equipment and of practices in locating and correcting faults. To a group of almost 400 meter readers bill collectors, connected-load-inspectors and bill deliverers, divided into approximately 20 groups, are being presented the practices, forms, and principles employed in the work of each job, as a means of promoting mobility within this group of allied jobs.

METHODS EMPLOYED

The policies which have governed the organization of each of these training programs can perhaps best be illustrated by describing briefly one of the programs now in operation. This in-

volves the instruction of overhead linemen in the four suburban areas included in the territory served by the Philadel-

PHILADELPHIA ELECTRIC COMPANY

March 1932

T. AND D. TRAINING COURSE

LESSON #5

CLIMBING THE POLE

FIELD PROJECT

I. PREPARING FOR THE CLIMB
- A. Inspection of climbers
- B. " " body belt and safety belt
- C. " " tools and clothing
- D. " " rubber gloves and rubber protectors

II. CLIMBING THE POLE
- A. Inspection of the pole
- B. Use of the climbers
- C. " " body belt and safety belt

III. WORKING ON THE POLE
- A. Working position
  - a. Use of safety belt
  - b. " " rubber gloves
  - c. " " tools
- B. Placing of rubber protection
  - a. Line hose
  - b. Insulator hoods
  - c. Rubber blankets

IV. SAFETY TO WORKMAN AND PUBLIC
- A. The proper handling of tools
- B. " " placing of rubber
- C. " use of danger signs or signals
- D. " guarding of the space adjacent to pole

REFERENCE. INSTRUCTION OUTLINE.

FIG. 1A. SAMPLE FIELD PROJECT FROM LINEMEN'S COURSE

phia Electric Company. This course is divided into two parts, Part I, entitled "Building a Line," Part II, "Maintaining a Line." The first topic in Part I is *Digging a Hole*. The course then proceeds through such lessons as *Preparing the Pole, Guying the Pole, Placing Cross-Arms and Insulators, Stringing the Wire, Transformer Installation*, to the final lesson on *Installing O.D.E.'s* (Outdoor Equipment). This is followed by a series of lessons on maintenance, constituting Part II of the course, including lessons on *Replacing Poles and Cross Arms*,

Transformers, and involving a full discussion of fault location and correction which are involved in the process of description of operating practices and safety features. Elements of electricity, for example, are not discussed

PHILADELPHIA ELECTRIC COMPANY

March 1932

T. AND D. TRAINING COURSE

LESSON #5

CLIMBING THE POLE

FIELD PROJECT REPORT

This form to be filled in by Foreman when the project is completed and returned to the training headquarters.

NAME———— DIVISION————

POSITION———— DATE SCHEDULED————

DATE COMPLETED————

PROJECT

CLIMBING THE POLE

Underline the term that best describes the quality of the man's work on this project: Very good, good, fair, poor, very poor.
Questions to be asked the workman upon the completion of the project.
Check in the column to indicate right or wrong answer.
Explain the correct answers but be sure to grade original answers.

	CORRECT	WRONG
1. How should a body belt and a safety belt be inspected.		
2. How should climbers be inspected.		
3. What test should be given a safety belt before starting work on a pole.		
4. When should rubber gloves be used.		
5. What should be used for a suitable support for a safety belt.		
6. What should be done with tools or equipment when not in use.		
7. What protection should be placed before working near a hot wire.		
8. What should a workman observe in his general view before climbing a pole.		

SIGNED————————FOREMAN

FIG. 1B

maintaining lines and furnishing reliable, continuous service.

Each of these lessons is primarily a until the lesson on *Transformer Installation* (Lesson XI) is reached, and then only with a minimum of detail and

PHILADELPHIA ELECTRIC COMPANY

(Service Maintenance Training Course)

Lesson No. 3

(THE 13,200-VOLT DISTRIBUTION SYSTEM)

POLE TOP EXTENSIONS

When it is found necessary to install a 13,200 volt circuit on an existing pole line, the poles of which are too short, pole extensions, as shown in Figure #13, are used to support the 13,200 volt arms, in order to avoid the expense of replacing the poles.

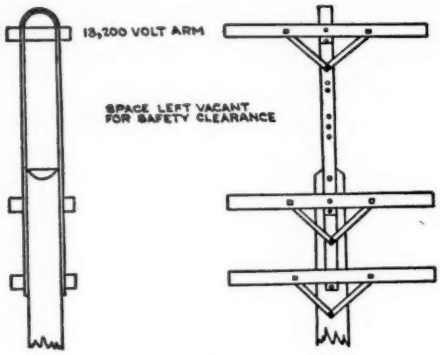
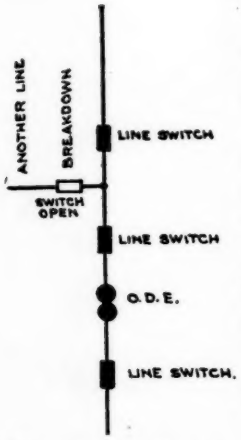


FIGURE #13

POLE SWITCHES

Figure No. 14 on page 13 shows a typical pole switch and shows the method by which the aerial lines are connected to it. It consists of three gang-operated air-break disconnecting switches, mounted on insulators supported by channel irons.

These switches are divided into two classes: Line Switches, which normally operate closed, and Breakdown Switches, which normally operate open. The line switches are for sectionalizing a line for maintenance purposes or in case of trouble. They are always found on either side of an ODE or tap supplying an industrial customer, so that in case of trouble on one or the other, two switches can be opened and the line re-energized, leaving the faulty section isolated. Breakdown Switches are provided so that two lines can be connected together and load on a line in trouble can be picked up on other lines. The use of these two types of switches creates a very flexible distribution system over which the highest degree of reliable service can be rendered.



(Figure #3 continued on page 14)

FIG. 2. SAMPLE PAGE FROM SERVICE MAINTENANCE COURSE

through the use of demonstration equipment which simplifies to the greatest possible extent the presentation of such material.

the gang foreman, who grades the employee on actual performance and on a series of stated questions asked by the foreman upon the completion

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PHILADELPHIA ELECTRIC COMPANY

Training Course for Meter Readers and Bill Collectors

1932 - 1933

Quiz on Lesson II

Directions:—Answer the following questions by either underlining the correct answer when more than one answer is suggested, or by filling in the blank spaces.

. . . . . .

1. The regular, tin case gas meters, meter gas at pressures averaging: 2, 5, 10, 15, 20, inches water column, which is: considerably below, just below, slightly above, considerably above, atmospheric pressure.
   (Underline the correct answers)

2. On disconnecting electric service, the service entrance equipment should be left with:
   (a) Fuses removed, switch open, unsealed.
   (b) Fuses not removed, switch open, sealed.
   (c) Fuses not removed, switch closed, unsealed.
   (d) Fuses not removed, switch open, unsealed.
   (e) Fuses removed, switch closed, sealed.
   (f) Fuses removed, switch open, sealed.
   (Underline the correct answer)

3. When gas is metered under high pressure, in order to measure accurately the amount of gas consumed, it is necessary to use:
   (a) A two-foot proving dial.
   (b) A disc constant.
   (c) A pressure correction factor.
   (d) A meter constant.
   (e) A cylinder type demand meter.
   (Underline the correct answer)

4. Fundamentally, electricity should be sold on the basis of two factors; first, the customer's———with respect to his connected load and second, his actual consumption of energy expressed in———— ————.
   (Fill in the blank spaces)

FIG. 3. PORTION OF QUIZ FROM TRAINING COURSE FOR METER READERS AND BILL COLLECTORS

Each lesson includes *field projects* and a *classroom exercise.* Each field project represents a task performed by the employee under the supervision of

of the task. The required task is described in a carefully prepared outline provided to the gang foreman who acts in the capacity of instructor in

this phase of the course. (A sample field project from the Linemen's Course is shown in figures 1A and 1B.)

Each classroom exercise involves a 2½ hour period of supplementary instruction on practices and underlying principles and theory. The instructor in this case is again a member of the operating force, in some instances an engineering assistant, who is in each case assisted by a demonstrator, generally a foreman, whose experience makes him particularly competent to handle the practical demonstrations that take up the major part of the classroom instruction period. (A sample page from the course material provided in the Service Maintenance Course is shown in figure 2.)

In this instruction course the gang attends the classroom period as a unit. The gang as a whole lays off work at an earlier hour on the afternoon of the class meeting, which occurs every two weeks, over a total period of approximately 60 weeks, and devotes the remainder of the afternoon to the classroom exercise. Paralleling the field projects and classroom exercises are home assignments, questions, periodic reviews, quizzes, etc. Adequate records of progress in each phase of the course are maintained. (A portion of a quiz from the Training Course for meter readers and bill collectors is shown in figure 3.)

ORGANIZATION OF THE TRAINING PROGRAM

It is evident from what has been said that instruction is being given by members of the supervisory force of the Transmission and Distribution (T. and D.) Division. Moreover, the course was laid out by a committee of such supervisors sitting under the chairmanship of the Director of Personnel Research, Personnel, Claims and Safety Department. In addition, each lesson is separately prepared by the instructor and demonstrator in each of the four regional instruction groups. These lessons are sent to a Central Headquarters School, maintained by the Operations Department to function as a clearing and general administrative agency for courses conducted by the Operations Department. Here the material sent in by the four different headquarters is collated. The material so collated is then presented at a monthly meeting of instructors and demonstrators at which the final outline is prepared, demonstrations arranged and such other measures taken as are necessary to insure the uniformity of instruction in all regional groups.

Here again it can be seen that the responsibility for training, even in a broader sense, has been placed in the hands of the supervisory force of the T. and D. Division. Although responsibility for instruction is placed in the hands of the operating force, it is recognized that where there are many divisions in a large department carrying on training programs duplication can be avoided and economy effected by centralized administrative control. For this reason, in the Operations Department there is a Supervisor of Training, with two assistants, who cooperate with the committees of operating divisions in the exchange of in-

struction material, etc. In addition, the Supervisor of Training, Operations Department checks on the actual instruction on the part of instructors in the various divisions of the Operations Department by means of frequent visits.

In addition to such centralized administrative control, found at the present time only in the Operations Department, and in none of the other three major operating departments, it has seemed desirable to set up an agency for providing staff aid in the organization and general supervision of training programs. Authority in this respect is vested in the Personnel Department, and is exercised through the Director of Personnel Research, who acts as Chairman of all committees in the various departments engaged in the development of training programs. This organization makes possible complete coördination and insures an exchange of material and methods developed in individual divisions and departments, so that the experience of a single unit can be capitalized throughout the entire company. Moreover, the representative of the Personnel Department acts as a specialist to whom general problems of administration, teaching methods, etc. are referred. As an additional step in coördination and control there have been established an Operating Committee on Training, with representatives from the major departments of the Company, and an Advisory Committee on Training, including executives of the Company meeting under the chairmanship of the Manager, Personnel, Claims and Safety Department, who pass upon all proposed training programs before they are placed into operation.[7]

UNDERLYING PRINCIPLES IN TRAINING EMPLOYEES

A review of the training program to which reference has been made in this paper shows that the following principles are held to be essential in the development of adequate training programs.

1. In the first place, it is felt that training is one of the primary functions of all management. It is the direct responsibility of the operating departments and cannot be delegated to any agency outside of the department itself.

2. Inasmuch as training is the function of operating departments, the training is carried or by instructors who are members of such departments, appointed by operating executives and directly responsible to them for the administration of the training course.

3. It is felt, however, that in the development of training programs operating departments can be aided by educational specialists attached to the staff of the Personnel Department.

[7] A program such as that described above necessarily involves the close cooperation of the supervisory force. In Philadelphia Electric Company the success of the training program rests largely upon such cooperation on the part of executives and supervisory officials of all departments involved. Particular mention must be made of the contributions of L. E. Goodenough, Supervisor of Training, Operations Department, in developing course content and in the general administration of the training programs for electrical employees of the Operations Department.

The latter can contribute toward the organization of individual training programs and toward the coördination of training throughout the company by providing staff supervision in the systematization of training, and in its extension and development.

4. Training must be practical in character. It cannot be carried on in a centralized school completely separated from the operating organization. Training on the job itself is the fundamental feature of any training course, even though it may be desirable to supplement such practical training on the job with training in principles in a centralized headquarters school. However, the training on the job must be as highly systematized as that carried on in the headquarters school.

5. Adequate records of men under training are essential to the development of a training program and to the most satisfactory utilization of the increased knowledge and improvement in operating efficiency on the part of the individual employees.

6. Coöperation between operating departments and the Personnel Department which exercises staff supervision in training is the keynote for the successful development and operation of training programs. Training programs in the Philadelphia Electric Company represent the result of such coöperation between operating and personnel departments.

7. Properly organized, properly administered, systematic training is a fundamentally sound procedure which can be expected to return rich dividends in the form of more efficient work and of workers better adjusted to the routine and emergency demands of their job. Perhaps the chief value of such training, particularly when extended to older, experienced men, is that described in a statement made by one member of the executive staff of Philadelphia Electric Company:[8]—"The man who knows his job is the man who will be kept on the job and who will be advanced as opportunities for promotion occur. Such increased probability of continued employment in the same, other, or better job is perhaps the outstanding contribution of a systematic plan of instruction for both new and inexperienced workers."

[8] H. B. Bryans, Vice-President in charge of Operations.

Personnel Policies During Business Recovery

An Economist's View

By Virgil Jordan, *McGraw-Hill Publishing Company*

The character of personnel policies in the period that lies ahead will be determined not merely by the fact of business recovery, but much more by its nature. The process of business recovery will be long-drawn out. In many fields deflation has hardly begun. Labor standards are likely to be lowered. Large labor surplus and resultant insecurity will make the personnel department's main task that of stabilizing the psychological relationship of the ordinary worker to the existing industrial system. Ultimately the larger burdens of readjustment that will fall on personnel management will have to be absorbed by public action through regulation of working hours and establishment of an unemployment insurance system.

THE character of personnel policies in the period that lies ahead will be determined not merely by the fact of business recovery, but much more by its nature. Although some of our political and economic mentors have assured us that in this country they are a constant, business prospects seem to me no less variable than personnel policies, and in order to determine that latter it seems to me necessary first to assign some value—even though it be arbitrary—to the former. That is what I propose to do tonight, pointing out some of the implications of different types of business recovery for personnel policies, but leaving to other speakers the task of working out the equation and finding the final value of x.

Let me start by stating a proposition, which seems to me necessary to clear the ground for speculation. The mores of industrial relations and the technology of personnel administration as we know them today are essentially products of the system of private capitalistic enterprise under which business has developed up to the present. I am not sure whether they would be much different or how they would differ under any other type of economic organization; but it does not seem to me important for present purposes to speculate on this point, for I can see no prospect of any significant change during the next phase of the business cycle in the basic system under which business will operate in this country.

If you look abroad you can see evidences of a rapid drift toward state capitalism which has resulted from the depression in all European countries except France; and doubtless the in-

creasing participation of governments of these countries in the ownership or control of industrial enterprises to avoid collapse will continue after recovery and produce important consequences for policies of personnel management. But in this country I believe the recovery period will bring a rapid return to the "tried and true" principles of individual initiative and private responsibility and all the other American virtues which you have heard expounded *ad nauseam* in the recent campaign. At least an attempt will be made to do so during one more prosperity cycle on the old pattern.

You may be sceptical of his hypothesis, for it is easy to point out apparent tendencies in the opposite direction in certain policies adopted during the depression. Paradoxically, the Administration which has been most ardent in its defense of these principles has at the same time applied emergency measures to meet the depression which are apparently pointed in the opposite direction. The heavy investment of the federal government in banks and other financial institutions, in railroads, agriculture and construction enterprises would seem on the surface to have carried us a long way toward state capitalism; but I do not believe that these investments are intended to be or will be permanent, or if they do turn out so, that they will imply any exercise of real control over such enterprises within the next recovery period. It seems to me that this intervention in the ordinary processes of private investment and enterprise has been undertaken primarily in the interest of protecting or preserving private debt claims rather than for the purpose of supplanting them.

I may be wrong about this and am open to persuasion by other prophets, but that is the way it seems to me at present. It is an important point from the viewpoint of personnel policies, because obviously the position of important groups of workers, as for example railroad labor, will depend upon the permanence of governmental investment in the railroad industry. If the government is going to guarantee in any degree the income or assets of railroad bondholders, it will be forced to safeguard the interests of railroad workers as well. It is easy to see where this would lead; but in the end I do not think the government will do either, and will rather allow the process of readjustment through receivership and reorganization to take its course with such consequences to both interests as are dictated by the circumstances.

In a general way it seems to me that this pattern of recovery will apply to all types of business enterprise, except possibly agriculture. The issue of recovery so far as this country is concerned has become quite clear. As a result of the drastic decline, it has been from the beginning a question of writing down the currency or writing down the debt structure. I still believe it would have been possible at an early stage in the first half of 1930 to have avoided the issue or at least softened the process by vigorous credit reflation through Federal Reserve operations. But this opportunity was missed. Since then the alternatives have been (a) protection of debt claims and capi-

tal values through resort to state capitalism on a large scale, involving subsidy of and participation in private enterprise, which would have led directly or indirectly to outright inflation of the currency; (b) devaluation of the currency; (c) debt readjustment through default, repudiation, reorganization.

Our decision has been made. We are determined not to inflate the currency or to revalue it. We have been willing to go a certain distance toward state capitalism in order to prevent complete collapse of our banking system, and to make a slight gesture toward stimulating employment by construction loans. But where this effort has come into conflict with our fiscal complexes, threatened an increasingly unbalanced budget, forced us to set up an extraordinary budget to conceal the unbalance, and involved the unlimited financing of federal deficits by bank credit, we have balked. Congress may force us a bit farther in that direction under pressure of this winter's unemployment difficulties; but it is likely that further extraordinary appropriations of public funds will be by way of unemployment relief rather than additional investment in enterprise, and will be offset anyway by increased taxes and reduced ordinary expenditures to secure a balanced budget in 1934.

The possibility of deliberate currency devaluation seems to me quite inconceivable. In spite of what some of the pontifical financial soothsayers may insist, we might have been pushed off the gold standard at one stage of the depression, but in the state of public official ignorance in these matters it is altogether impossible that we should calmly step off it, as we would do if there were any economic intelligence in the country.

The road of recovery we have chosen is therefore the rocky road of slow, painful, piecemeal deflation, of readjustment of capital values and wages to a pre-war level of prices, and of return to *laissez aller* in most aspects of our economic life. The prospect of a quick recovery in the post-war pattern via an inflationary expansion, through large-scale absorpton of bank credit in private speculation, or in new private investment, or in export trade, or through such large-scale absorption in public expenditures and investments as would lead to an extension of state capitalism seems to me remote at the moment. In considering the picture of personnel relations in the period that lies ahead I believe we may safely count upon a recovery of this crawling kind, more nearly resembling those of the period from '73 to '93 than any in our later experience.

I excepted agriculture from this description because I think it possible that in this field there will be an extension of state capitalism and public control, first through increasing use of public credit to protect farm debtors and refinance farm debts, and second through some device for raising the domestic price of farm products. In this field of course the deflation process has already gone much farther than in any other, and political pressure as well as urban business opinion will tend to support efforts to check and offset it.

In most other fields, however, I think it will be allowed full sway from now on. The dominant opinion seems to be that it was a mistake to attempt to postpone or mitigate it, and that the sooner we make the necesary adjustments, the speedier the recovery will be. In a sense that is the significance of the election. We are apparently committed to the purging process upon which the castor oil school of economic thought insisted from the outset as inevitable and necessary. The deflationists or rather the anti-inflationists have won the day. The implications for personnel policies are important.

In the first place it implies that the process of business recovery will be long-drawn out. Even if we assume that this summer saw the bottom for the level of general business activity and commodity prices, the deflation process in many fields has hardly begun, but instead has been held off in expectation of salvation by "reflation." At least it is very uncertain in how wide an area it still has to be undergone, and quite certain that its incidence is going to be very uneven. The strongest groups of creditors are sure to suffer least and the weakest groups of debtors most. Weak creditors, like bank depositors, have already paid the price; strong groups of debtors, like farmers and foreign governments will get someone else to pay it for them. In general, those debts which can most easily be shifted to the shoulders of heterogeneous and unorganized groups will be adjusted most promptly. The intergovernmental war debts are the outstanding example. Possibly the farm debts will be another. The taxpayers will pay them, but not out of increased profits of improved international or domestic trade. Such improvement will be largely disappointing anyway, and the increased public debt burdens consequent upon their readjustment will be put more largely upon consumption rather than on income or savings through sales taxes in order to avoid discouragement to enterprise and investment. Our bankruptcy and receivership laws are not adapted to deal with such a vast and complex problem as is involved in putting a large part of American corporation business through the wringer. They inevitably make for long delay and much injustice and waste. The net effect of the process, however, is certain to be an intensification of competition in every field in domestic and foreign markets as one by one the phoenixes of deflation arise from the ashes of receivership free of a large part of their debt and other overhead charges and face competitors not so fortunate.

All this means that labor standards are likely to be lowered all round, and that in the end the main burden of deflation will be shifted to the weakest group of all, the unorganized worker. The real deflation of wage scales, drastic as it already seems on the surface when payroll reduction through unemployment and part-time work are considered, has hardly begun as yet. It will probably come in full flood in the next year or two. Whatever incentive there may have existed for use of wage incentive plans will lose much of its force. The fear of unemployment will be a sharper incentive to speed-up than ever. Time wage payment will lend itself to the spread work

movement, which will probably gain momentum as a means of shifting the burden of unemployment relief from income taxes to wages.

On the whole, personnel management will be more than ever concerned with public or private aspects of unemployment relief; for the lowering of wage standards itself will tend to insure the maintenance of a large surplus of labor, precisely contrary to the teachings of the classical economists. It would be possible to secure full employment in our present industrial situation only on the basis of drastic wage increases, and these are impossible under our system of private competitive enterprise.

Questions of wages and working hours, viewed from the standpoint of unemployment relief are likely to weigh more heavily than matters of efficiency. If, as I believe, the two essential preoccupations of personnel management within the capitalistic framework have been, first, to secure the most effective application of labor and, second, to stabilize the psychological relationship of the ordinary worker to the existing industrial system, then I should say that the main task of personnel policy in the coming period of business recovery is likely to be the second rather than the first of these concerns. It will be easy enough to get a satisfactory result for what is paid in terms of labor cost, but I think personnel relations are likely to be made increasingly difficult in the future by intensification of the sense of insecurity both in employer and employee. This will result for the worker not merely from the insecurity of employment and income itself, but also from the sharpened sense of frustration which will accompany a forced and sudden reduction in the standard of living. Greater leisure and a higher standard of life have served in the past as compensations for the creative frustrations implicit in the mechanization of work, and these compensations will not be so great in the future.

Ultimately, of course, these larger burdens of readjustment that will fall on personnel management will have to be shifted to and absorbed by public action through regulation of working hours and establishment of an unemployment insurance system; but in a large part of the recovery period they will fall primarily upon personnel management and heighten its responsibilities.

Renewals, Orders, and Cancellations in a Public Employment Exchange

By Willard E. Parker, *Public Employment Center of Rochester*

Study of various methods of renewing applications with the public employment office reveals that the return postcard method is most efficient. Procedure in dealing with 2,929 job orders is analyzed in terms of how they were received, applicants considered and referred, number of telephone calls, letters, telegrams, advertisements, and re-interviews necessary, and other factors. Time taken in selection is related to type of job, years of experience and education required, and pay. Cancellations of orders are analyzed.

MEMBERS and friends of the Personnel Research Federation need no introduction to the Public Employment Center of Rochester. The general plans for its operation were discussed in this Journal (February, 1932). Our program may be summed up as follows. The Public Employment Center of Rochester was established as a demonstration office to operate a modern labor exchange and through the study of its functions to offer suggestions for the improvement of public employment office methods in New York State. Through the efforts of Miss Frances Perkins and the New York State Advisory Council on Employment Problems, we began our work early last year. To my knowledge, no well-defined technique or 'best method' has, as yet, been worked out for employment exchanges in this country or abroad. Our experimentation must therefore proceed largely by the trial and error route. Some functions of the employment exchange lend themselves readily to an experimental and statistical treatment; others, which perhaps include many of the more important activities, lie largely in an intangible and subjective area. It is recognized that probably no activity of an employment exchange can be completely controlled, and that perhaps we shall never be able to do more than approach 'an exact science' interpretation of its methods. Discussion in the two papers presented will be restricted to a few of our findings from preliminary studies of only four phases of the work of the employment exchange; namely, renewals, orders, cancellations, and follow up. Data in these studies are no doubt conditioned by the depressed employment situation existing during the past six months in which these analyses were made. Interpretation of any findings must, therefore, be guarded.

I. RENEWALS

When an applicant registers for work in a public employment office, his

registration form is placed in the active file where it remains for a period of two weeks, a month, or even longer, depending on the policy of the particular labor exchange. During this 'Period of Validity,' or 'Active Period,' of the registration, the employment office, unless otherwise notified, considers this applicant available for such work as it may find for him. At the end of this 'Active Period' the registration card is transferred into the inactive file unless the applicant notifies the employment office that he is still available and wishes to be given further consideration. By so notifying the office, the applicant renews his application and his registration form is retained in the active file for another "Active Period.' The number of renewals made each day has a direct bearing on the size of the active file. The purpose of an active file of applications is to assemble conveniently the labor supply that is actually available for employment. With a large and up-to-date active file, the placement officer can quickly select and locate the best qualified workers who are actually ready to go on the job.

During the first interview it is explained to the applicant that his registration will be active for a period of the next 30 days. He is told that if he wishes to have the employment exchange continue to help him after this 30-day period, he must notify the office of his availability by writing, telephoning, or coming to the office. By placing the responsibility of making renewals voluntarily with the applicant, the employment office obtains a more up-to-date and accurate active file.

There are three principal ways in which renewals may be made by the applicant. Some offices require the applicant to call at the office in person; others permit him to make his renewals by telephone. A few offices send the applicant a return postcard before the period of validity of his registration has ended. All of these methods are used at the Public Employment Center of Rochester. The purpose of our study was to determine, if possible, the best procedure to be followed in making renewals and to examine the relative efficiency of each method and its effect on the size and character of the active file.

The analysis of over 6000 registrations in all occupational groups, made over a 3-month period before the return postcard method for renewals was introduced, serves as a control group. Renewals in this control group were voluntary and were made by only 46 per cent of the applicants. Those who did renew, did so on the average of 1.8 times each. The applicants who renewed most frequently were the Women Day Workers (68 per cent of whom renewed), Commercial and Professional Men, and the Laborers. These men and women who do the casual work of the community are fairly regular in keeping their registrations active, since they are sent out more frequently on jobs by the employment office. To allow their registrations to become inactive would eliminate their placement opportunities.

As a second control group a study was made of a thousand registration blanks—taken at random from the inactive file of the Commercial and Professional Division. Of this group, ap-

proximately half of the men and women *who did renew* their applications, did so before the expiration date. The other half who renewed, did so over a period of two months after the day their cards were transferred into the inactive file. About half of these applicants who renewed, did so only once. The remainder made renewals a number of times, ranging from the 25 per cent who renewed twice to the 2 per cent who renewed seven times or more.

For a period of six months return postcards for the purpose of making renewals were mailed to all the applicants in the Commercial and Professional Division. Seventy-one per cent of the men and 78 per cent of the women returned these cards, requesting that their applications be renewed. These return postcards increased renewals 13 per cent for men and 30 per cent for women over the voluntary method used with the control groups. Furthermore, nearly all of these postcards were returned to the office within three days, making it possible for the clerical work on renewals to be done at one time with less effort. The return postcard method for making renewals had an immediate effect upon the size of the active file. In spite of the fact that there was a decrease of 34 per cent in the number of new registrations during the six months period in which the return postcard method was studied, the size of the active file increased 153 per cent in size over the period in which voluntary renewals were used. The number of applicants making renewals increased 24 per cent. All renewals were made more regularly, usually every month as contrasted with the average of only 1.8 times per applicant by the voluntary method. Apparently the return postcard method for making renewals, for commercial applicants at least, is the best method so far studied from the point of view of the size of the active file and for frequency and regularity of renewals.

A study of methods of making renewals would not be complete without some consideration of the time and effort involved in each. Stopwatch time studies were made on a large number of renewals made by each of the three methods. These time studies show that there is very little difference in the amount of time involved in each method. Renewals by personal visit of the applicant to the office require, on the average, 0.7 of a minute per renewal, while renewals made by a telephone call by the applicant require approximately one minute each. Renewals by the return postcard method average 0.8 of a minute per renewal. While the amount of time involved by each of these methods differed very little, one important feature should not be overlooked. The postcards cost $2\frac{3}{4}$ cents each. If the employment office can afford this expenditure, our study indicates that, for the higher occupational levels at least, the return postcard method is far superior to other methods of making renewals. Furthermore, it helps to avoid congestion in the offices and saves the applicant numerous trips to the office.

II. ORDERS

Filling employers' orders for workers is probably the most important work of the public employment exchange. The record of any employment office in filling the jobs in the community

satisfactorily should be the foremost criterion by which its success should be judged. Only the selection of candidates best fitted for each opening, according to the job specifications of the employer, will build confidence in the office. While the importance of filling orders is recognized, few stud-

ORDER REPORT

1. Order No.		Section		Interviewer		5. Job Title
3. How Rec'd	6. Lg. Emp.	8. Ed. Req.		4. No. Opens.	Men / Women	Code
T.	7. Pay Wk.	9. Yrs. Exp. Req.	10. No. Apps. Considered Act. File	11. No. of these Ref.		2. Date Rec'd
E.V.						
F.						
O.						
Phone Calls		**Correspondence**		**Interviews**		**Results**
12. Apps.		Apps.	Employers	23. Grand Total Apps.		24. Total Apps. Ref.
		34. Post Cds.	38.			
25. Employers		20. 2¢ Letters	39.	27. Employers In	26. Out	30. No. Placed
						48. Tests
14. Contacts to find New Apps.		21. Spec. Del.	Letters 40.	Staff No. Time 45. Inds. 46. Meetings 47. Tot. St. Time		28. Estimate Hrs. Total Time
32. Call References		22. Telegrams	41.	**Publicity** 19. Adv.		44. Total Expenditures
33. Long Distance		36. To References		42. Days Run		29. If Canc.—Date
13. Cost				43. Cost		
17. Staff	Time Used	37. To Find New Apps. and Clearance		16. State Clearance No. Ref.		31. Date order card Filed

FIG. 1

ies have been made on this procedure and practically nothing is known about the factors which make for successful placements. Employment exchanges, are frequently judged by the number of placements made or the cost per placement. No discrimination has been made as to the types of placements. Thus, the placement of a laborer, who shovels snow for a few hours after a snowstorm, has been given the same credit as the placement of a highly specialized chief engineer in a permanent job with a large corporation. Some weighted formula for evaluating the placement activities of the employment exchange is sorely needed. The proper distribution of placement officers' time, in the now understaffed employment exchanges, is of first importance. How much time and effort spent in placing workers in different occupations can be justified? Is it more difficult for the placement officer to secure the placement of a business executive or a chauffeur? If there is a difference in the time and money involved in making placements in different occupations, how far should a free state employment service go towards offering a complete employment service? What is involved in the placement of a farmhand and the selection of an accountant; and how many of such orders can placement officers be expected to take care of efficiently? What is the relationship between what the placement officer does on each order and his ultimate success or failure to fill the order? Such questions as these assail the investigator who would attempt to improve present conditions.

To get factual data on some of these questions for possible future recommendations, the Public Employment Center of Rochester records every activity on all employers' orders that it receives. The form for these records, known as the Order Report, is represented in figure 1.

As the placement officer works on each order, he records all that he does to fill it and makes a careful estimate of the time spent on each activity. In the top section are recorded some of the items which are known when the order is received. In the vertical columns below, the placement officer records his telephone calls, correspondence, interviews, publicity, etc., and makes a time record of each thing he does. When the order is filled or canceled, the total time spend on it is entered in the last column. With such records, we obtain a complete history and time report of our placement activities on each order.

Such records have been kept for the last six months. This paper will note only a few of the preliminary findings. Data on these preliminary findings are derived from an analysis of 2929 openings. This work is being continued and eventually will be broken down into studies by single occupations. The data here included, however, are either summarized for the organization as a whole, or are presented for groups of similar occupations as they are served by our 13 different occupational sections.

How received

Most of the orders in all sections, with the exception of those for Farm

Workers, are received by telephone. Eighty-two per cent of the orders are thus received. Seventeen per cent of all orders are received through the visits of employers to our offices. This method, while it has the advantage of giving a more intimate contact with the employer, requires considerably more time than does the telephone call. Nearly all of the farm orders are received by personal visits to the employment office, most of the farmers dropping in early in the morning on their way to market to select farmhands and taking them to the farm on the return trip. Also, a considerable number of housewives call at the office for domestic servants. Orders received at the time of field visits by members of the staff to the place of employment are discouragingly low. Less than .5 per cent of our orders are received during field trips. However, it is probably true that most of our orders from business and industrial employers are the direct result of field visits previously made. Field visits are confined almost entirely to industrial and business institutions. During these depressed times, it seems to be more a matter of chance than anything else that the staff member should arrive at a plant at exactly the moment when the employer is in need of workers. Field work is a sales function which must be constantly pursued if the employment exchange is to maintain its position as the community's labor reservoir. Other orders are received in various ways. Sometimes information will come through a friend of the office that a concern is hiring workers, whereupon the interviewer will visit or telephone the company and obtain an order.

Applicants considered and referred

As the first step in filling an order, the placement officer selects from the active file the best qualified applicants for consideration. The records of these applicants are studied carefully and two or three are selected who seem best qualified to meet the job specifications. For approximately 3000 openings analyzed in this study, 6500 applicants were considered in this first rough screening process of selection from the active file. Of these, 3800 were subsequently referred to the employer. It frequently happens, however, that these candidates do not satisfy the employer, and it then becomes necessary for the placement officer to search about the community for properly qualified applicants. It is at this stage that the placement officer must display ingenuity. He must consider the most likely individuals or concerns who might know where suitable workers could be found. Frequently this means telephoning to companies which have laid off workers in the same or similar occupation. Sometimes trade associations are contacted. Other workers in the field frequently provide good leads. The success of telephoning or writing to such sources is attested by the fact that 274 such telephone calls have resulted in finding and placing 184 workers in the last six months. When qualified workers cannot be located immediately in a community by such procedures, the order is placed in "Clearance"; that is, the other public employment offices

of the state are requested to send information about available qualified applicants. "Clearance" is particularly useful for locating highly specialized workers who may not be available in a local community. This process of transferring workers from one office to another through "Clearance" in the State of New York has been developing with marked success under Mr. Fritz Kaufmann's direction.

Telephone calls

Telephone conversations account for a large proportion of the time spent in the process of selecting workers. Employers must be called for their reports on applicants who have been referred, or for more detailed job specifications, and for confirmation of placements. Applicants must be reached by the telephone so that they may be referred to employers, or to request them to come to the office for check-up interviews before they are sent out. References must be checked by calling former employers. For about 3000 orders, approximately 10,000 telephone calls were required, an average of 3.2 telephone calls per opening. If the employment exchange has metered telephone service, the cost of these calls is an important item in its budget.

Letters and telegrams

Many of the applicants do not have telephones in their homes, so that special delivery letters and telegrams or regular letters must be sent to notify them about possible jobs. Writing these letters is, of course, more time-consuming than are telephone conversations. Out of town employers and applicants also must be reached through the mails. Fortunately, however, most applicants and employers can be reached directly by telephone or by means of a neighbor's telephone. We find that one out of every seven orders requires correspondence to fill it.

Advertisements

As a last resort, it is sometimes necessary for the employment office to advertise for workers. Advertisements are sometimes run when there has been an unusual demand for workers in some occupation and qualified applicants cannot be located immediately. Advertising to find applicants for orders, however, is an infrequent necessity; out of almost 3000 orders received in the last six months, only 32 have been filled through this medium.

Re-interviews

All applicants who have registered with the employment office have been interviewed at length at the time of registration. However, before an applicant is referred to an opening, it is frequently necessary to have another short interview with him in order to check up in more detail his qualifications for the particular work, or to determine whether or not he is interested in the particular opening. If the placement officer decides during this interview that an applicant should be referred, an introduction card is given to him to present to the employer. Longer interviews are required when it has been necessary to locate candidates who were not previously known to the office. Our records indicate that we

make an average of 1.3 re-interviews per opening.

Some employers come into the office several times to see the placement officer, or they request him to come to their offices. About one-fourth of all our orders entail a personal interview with the employer, most of which take place in the employment office.

Referrals

After any, or all, of these activities to select qualified applicants to match the job specifications, the candidates for the job are referred to the employer for his final selection. Some employers rely almost exclusively on the judgment of the employment office and will try out any applicants recommended. Others insist on seeing several or even many candidates before they are willing to make a choice. Perhaps some index of the efficiency of the employment office may be reflected in the number of referrals necessary per placement. Our average for the last six months has been 1.6 referrals per placement.

Selection time on openings

As has been previously stated, a careful estimate of the time involved for each activity of the placement officer in selecting and placing the worker is recorded on the Order Report. These time records are added for each order, to obtain the total estimated amount of time spent in selecting the worker for each opening. The average amount of time spent in filling openings should give some idea as to the work and difficulty involved for each occupation. Furthermore, it is useful to know the average amount of time necessary for placements in each section in order to allocate placement officers properly in the organization. Perhaps the average time required to fill jobs will help us to arrive at a weighted formula for evaluating placements. The order of difficulty as reflected by the average amount of time required to make a placement for various types of workers is as follows:

Sections	Average amount of time for placement *minutes*
Technical Men	180
Skilled Trades	108
Commercial and Professional Men.	54
Semi-skilled Industrial Men	42
Institutional Women	36
Domestic Service	36
Commercial and Clerical Women	30
Industrial Women	30
Junior Boys	24
Farm Workers	18
Junior Girls	12
Laborers	12
Women Day Workers	12

The average time per placement for the whole organization is 24 minutes each. It is noteworthy that time required for the selection of men ranks generally higher than that for women. This particularly is true for men who are selected for industry; the Technical, Skilled, and Semi-skilled men ranking first, second, and third in order of selection time required. At the lower end of the scale, as would be expected, are the common laborers, both men and women, requiring an average of only 12 minutes each per placement. The average time required to place engineers is 15 times as great as that needed to place unskilled laborers. As measured by time, it is nine times as difficult to fill an

order for a skilled trade as it is to fill an order for a laborer. Whether the employment office is justified in devoting so much more time in placing these highly trained workers must depend on many complex factors, not the least of which is the difference in social value of such placements to the community.

Years of experience and selection time required

There is a positive relationship between the amount of experience required of the worker by the job specifications, and the amount of time necessary on the part of the placement officer in filling the order. Thus, filling openings calling for a minimum of experience, one year or less, requires on the average 26 minutes of our time for selection of the worker, while those jobs demanding 8 or 9 years of experience of the applicant require five times as long, or 2 hours and 20 minutes of a placement officer's time. The coefficient of correlation between the number of years of experience required by the job specifications and the amount of time necessary to select the worker by the employment office is +0.61.

Education required and selection time

Demand for college-trained workers is found only in the Commercial and Professional and Technical Sections. The semi-skilled jobs call for workers of a trade school background. Labor, Farm, Day Work, Women's Industrial, and Domestic Service Sections are asked to supply only workers of a minimum of educational background, eighth grade or less being sufficient. Employers of domestic servants now show some tendency to ask for high school trained girls. The average time required of the placement officer on jobs which require applicants with some high school work as a background is just twice that required on jobs specifying only a minimum of educational background; 48 minutes each, as against 24 minutes. Filling orders with specifications for college-trained people requires an average of almost 3 hours each, or almost seven times as long as the orders calling for workers of a minimum of education. This increase in selection time is not due to any dearth of college-trained, qualified applicants, but rather to the greater care exercised in the decision by both employer and employee.

Tenure of employment and selection time

A little less than one-half of all the placements made by the Public Employment Center in the last six months were for jobs having a tenure supposed to be permanent; and about one-fourth of the placements were on jobs which lasted not more than one day. In general, the longer the duration of the job according to the order specifications, the longer will be the amount of time spent by the employment officer in filling that job. Thus jobs, no matter what their nature, lasting only one day or less, require an average of 12 minutes each for the selection of the accepted worker. Those jobs with a tenure of over a day, up to and including a month, take twice as much selection time as the one-day jobs, or an average of 24 minutes each. Those jobs having a duration of more than one month and up to and including 3

months require, on the average, 34 minutes each to place the worker. Jobs with a tenure of over 3 months and the so-called permanent jobs require an average of 40 minutes each from the placement officer, or over three times as long as the one-day jobs.

Pay per week and selection time

The coefficient of correlation between the pay per week offered and the amount of time spent by the placement officer in placing the worker is +0.86. Thus, the higher the pay offered, the more time will be required of the placement officer to complete the order. For jobs where skill is required, the pay per week bears a definite and positive relationship to the experience and education required. The coefficient of correlation for pay per week and education required for industrial workers is +0.84.

III. CANCELLATIONS

When, for any reason, the employment office discontinues its work towards filling an order, that order is said to be canceled. Cancellations may be caused by the action, or lack of action, by either employer, applicant, or the employment office. In a sense, cancellations represent the debits of the public employment office, since some of them are plainly due to the mistakes or failure of the exchange in meeting the demand. To correct these errors and improve the service, the public employment exchange should constantly scrutinize its cancellations. Data on

CANCELLATION REPORT

REASON FOR CANCELLATION

Circle (*one only*) principal reason—*check* other reasons.

A. Insufficient time allowed.
B. Qualifications required out of line with pay.
C. Pay unsatisfactory (No emphasis on qualifications).
D. Living or working conditions not acceptable to applicants.
E. Qualified applicants could not be located.
F. Change of plan by employer.
G. Promotion from within organization.
H. Canceled by this office (Ethical and other reasons).
I. Distance too great.
J. Temporary job.
K. Reason unknown.
L. Other—(Explain)—

EMPLOYERS FINAL DISPOSITION OF ORDER (CHECK ONE)

1. Filled by direct application to employer.
2. Filled by other agency.
3. Filled through friends or employes.
4. Filled through advertising.
5. Filled—method unknown.
6. Unfilled.
7. Unknown.
8. Other (Explain).

PUBLIC EMPLOYMENT CENTER OF ROCHESTER

FIG. 2

cancellations, given in this paper, are obtained in an analysis of 587 orders which were canceled during the last months. These cancellations represent 19 per cent of all the orders received during this time and occur in every occupational group, but by far the majority occurred in orders for domestic service workers.

When an order is canceled, the placement officer notes the reason for the cancellation and determines, if possible, the disposition of the job after the public employment office ceases work upon it. The form for recording information about cancellations, the reverse side of the Order Report, is shown in figure 2.

Cancellations by the duration of the job

As would be expected, there are scarcely any cancellations on jobs which last for one day or part of a day. Employers calling for workers for such a short duration of time usually want them immediately for a definite job. They rarely seem to change their plans. The same tendency holds for all temporary work, although the percentage of cancellations is somewhat greater in jobs of three months' duration or longer. It is in the group of jobs which last more than three months that the great majority of cancellations occur. While only 45.5 per cent of all the jobs received in our study were of so-called permanent tenure, 87 per cent of the cancellations occurred in this group. It would seem that employers are more apt to change their plans when a permanent job, or one of long-time duration, is involved. About one-fourth of all the jobs obtained by this office were for a duration of one day or less, yet the cancellations of this group amount to only 0.6 per cent of all the canceled orders. The percentages of cancellations by the duration of the job are listed below.

Duration of the job (canceled orders only)	*Percentage canceled*
One day or less	0.6
Over 1 day to 1 week	7.4
Over 1 week to 1 month	3.1
Over 1 month to 3 months	1.9
Over 3 months	87.0

Cancellations and pay offered

In every occupational group most of the orders which are canceled are for jobs which offer pay below the median. The median pay per week of canceled orders is over $5.00 lower than the median for filled orders.

Time spent on cancellations by departments

Orders which eventually are canceled require an average of exactly twice as much time of the placement officer as those orders which result in placements. The average amount of time spent per canceled order for the entire organization is 0.8 of an hour each, or 48 minutes. The average time for all filled orders or placements is .4 or 24 minutes each. The average amount of time required for occupational groups for filled and canceled orders is given in table 1.

Reasons for cancellations

Reasons for cancelling orders fall into ten groups. They are listed in order of importance and frequency in table 2.

TABLE 1

Time spent on filled and canceled orders

SECTIONS	AVERAGE TIME SPENT PER FILLED ORDER	AVERAGE TIME SPENT PER CANCELLATION
	hours	*hours*
Technical	3.0	6.7
Skilled	1.8	5.0
Com. and Prof. Men	0.9	4.0
Com. and Clerical Women	0.5	1.6
Industrial Women	0.5	1.3
Semi-skilled Men	0.7	1.3
Farm	0.3	0.9
Junior Boys	0.4	0.9
Labor	0.2	0.6
Domestic Service	0.6	0.6
Junior Girls	0.2	0.2
Women Day Workers	0.2	

Reason for cancellation and the years of experience required

Approximately 80 per cent of all canceled orders called for workers having experience of one year or less. Those canceled orders requiring workers of 2 years of experience form less than 10 per cent, and those specifying 8 or more years of experience represent 0.5 per cent of the total. It would seem, then, that nearly all of the jobs which are canceled require a minimum of experience and are of the type which call for workers who can be quickly trained. Few orders are canceled for jobs requiring a high degree of skill or special ability, and when these orders are canceled the reasons usually given are, "Promotion from within the organization" or "Qualifications required out of line with pay offered."

Reason for cancellation and disposition of the order

What eventually happens to orders which are canceled with the employment office gives some idea of the competition which the public employment exchange must meet. The disposition of many of the orders which are can-

TABLE 2

Reasons for cancellation

REASON FOR CANCELLATIONS	NUMBER OF CANCELLATIONS	PERCENTAGE OF TOTAL CANCELLATIONS	AVERAGE AMOUNT OF TIME SPENT ON EACH
			minutes
Change of plan by employer	134	23.1	65
Insufficient time allowed	88	15.0	20
Qualifications required out of line with pay	53	9.5	38
Pay unsatisfactory (No emphasis on qualifications)	52	9.5	29
Qualified applicants could not be located	49	8.3	43
Living or working conditions not acceptable to applicants	40	7.0	28
Canceled by this office (Ethical and other reasons)	17	3.0	53
Distance to job too great	15	2.6	40
Other reasons	108	17.0	55
Reason unknown	29	5.0	48
Total	587	100.0	48

celed is never known; whether or not they are filled cannot be ascertained. The disposition of 22 per cent of our canceled orders, after they are out of the hands of the employment exchange, is entirely unknown. Another 20 per cent of all our cancellations are known to be filled, but the method of filling them is unknown. Approximately 14 per cent of all our canceled orders are never filled. Most of these cancellations are due to a change of plan by the employer. Of the known disposition of canceled orders, those which are filled through other employees or friends of the employer account for 19 per cent of our lost orders. Friends of the employer and other employees are our most important known competitors. Canceled orders which are filled by means of advertisements represent 7 per cent of the total of those whose disposition is known. This is a low percentage, in view of the fact that many employers advertise for workers before giving the employment office the order and frequently they advertise while the employment office is working on it. Private and commercial agencies fill only 5 per cent of our canceled orders, a low percentage, since many employers give their orders to several fee-charging agencies and the public employment exchange at the same time. Only 2 per cent of the canceled orders are finally filled through direct application to the employer, or through what is sometimes known as gate applications. There is little relationship between the disposition of orders and the reason for their cancellation. Each reason for cancellation seems to have its share of the various possible dispositions after the jobs have been canceled in the public employment exchange. Again, there seems to be little relationship between the disposition of canceled orders and the pay offered. It will be remembered that the pay for most of the orders which are canceled is below standard. However, cancellations on jobs above the average in pay, if they are filled at all, are usually filled through friends and other employees.

Our studies on renewals, orders, and cancellations, as well as other activities of public employment exchanges, are being continued. Items noted in this paper are to be considered only as preliminary findings and are submitted without recommendations.

Placement Follow-up of Women

By Mabel E. Crafts, *Public Employment Center of Rochester*

Describes technique of follow-up of women placed in household and industrial occupations by the Public Employment Center of Rochester. Relationship is shown between satisfaction given by workers and such factors as time used in filling order, number of applicants referred, age, experience, and wages. In cases of separation, reasons for lay-off and quitting are listed.

A supplementary section describes a program of field work in a selected industry.

A DIRECTOR of a division made up of two separate sections has a splendid opportunity to compare methods of operation; and when these two sections happen to serve such different groups as household workers and factory workers the comparisons are of extreme interest.

To note some of the contrasts in these two sections we will consider certain important factors. In the Industrial Section employers frequently request several workers at one time. In the Service Section the usual order is for one person. An industrial order usually demands immediate attention, sometimes within the next 15 or 20 minutes, and a worker frequently must be at work at the next starting hour. A service order usually allows at least a day in which a choice of a suitable applicant may be made. For factory work, skill, or the ability of the worker to do the particular work at hand is of utmost importance and personality factors are secondary. For a household worker personality is of utmost importance, and the skill of the worker to do the job is considered after the personality factors are deemed satisfactory.

In factory work placement officers may obtain information about the place of work and conditions of employment through field visits and personal observations, but usually all that is known about a household job is the information received from the employer's telephoned description of her home and requirements. Additional information is sometimes obtained from ex-employees. Unless an opening happens to be in the home of a friend, no information gained from personal observation is available. In factory work it is the custom of employers to give freely all pertinent information about the job, but with household work it seems to be the custom to give as little information as possible about the details of the work and a placement officer who asks questions beyond the customary few is often thought to be unnecessarily inquisitive.

The standards in these two types of occupations have little in common. Throughout any given locality there is a fairly comparable measure of require-

ments in factory work. Success in a given job in any factory usually means the ability to do the same job well in another place. Wages also are comparable. This balance does not hold in private homes. Standards for house work vary without limit throughout any locality. Even in the homes of neighbors, with comparable modes of living, different qualifications are required to meet their individual standards, and wages fluctuate without regard to the amount of work required.

Before considering the orders received in any employment agency, it is well to recognize that the usual orders are from those factories and homes in which there is a certain degree of turn-over. There is always a background of both factories and private homes where a highly stabilized condition exists, and from which only occasional orders are received.

With this in mind, the placements made in both the Industrial and Service sections have been scrutinized. The study was made in harmony with our policy of analyzing our own procedures, both from the point of view of determining our present degree of efficiency and also to give us a working basis for making improvements in our technics. So far as is known, outside the demonstrations, the policy of following up every placement made is a new departure for public employment services. Agencies dealing with household workers know the number of placements they make and have observed that there is a large number of repeaters among applicants and employers, but apparently there has been no statistical explanation.

Certain organizations, notably the National Committee on Employer-Employee Relationships in the Home, have gathered together many facts relative to the problems met in household service and have suggested various methods of improving the situation, but their approach is necessarily different from that of an agency.

FOLLOW-UP METHODS

In order to discover how satisfactory our placements were, we first tried the plan of having placement officers call employers by telephone within a reasonable period after a placement was made. Because of the pressure of business it was found impracticable to carry out such a time consuming plan, and it was also felt unwise to delegate this work to anyone except placement officers. A form letter was then devised. In the Service Section, a semi-personal type of note is used and headings for recording particular items of information are noted on the reverse of the sheet. Each form letter is filled in with the name of the employer and the name of the applicant. The letter reads as follows:

My dear Mrs. Smith:

In order to discover if applicants have proved satisfactory in jobs to which they have been sent through our office, we are making inquiry regarding the ability of Alice Jones, employed by you August 25, 1932.

Please use the reverse side of this sheet to give us this information.

Very truly yours,

MABEL E. CRAFTS, *Director,*
Service and Women's Industrial Division

(Reverse Side)

Ability as (work employed for).....

Industry.....

Reliability.....
Adaptability.....
Still employed.....
If no longer employed:
Date left.....
Reason for leaving.....
Would you re-employ?.....
Additional information.....
.....
.....
Signed.....
Rating of Above Worker:

Very Satisfactory
Satisfactory
Fair
Not Satisfactory

In the Industrial Section where groups of workers are concerned, a separate sheet containing a list of the workers, with columns for recording the requested information, is sent, accompanied by a personal letter making the request for the information. In each case a stamped, addressed envelope accompanies the request. These letters are sent out some time during the month following that in which the placement is made. There is no definite period of time used, as the pressure of routine work has some bearing on the date the letters are sent out. The reports from the employers are usually received in the following month, giving, in most cases, a lapse of at least one month from the date of placement. Delayed reports are usually obtained eventually, either by telephone calls or a second letter.

Employers' ratings are indicated in four grades—not satisfactory, fair, satisfactory, and very satisfactory. Because of the difficulty presented by the lack of reliability in ratings, observed statistically in this group of employers, all grades above "not satisfactory" have been grouped together, and the study is measured in terms of "not satisfactory" and "satisfactory."

PERIOD COVERED AND NUMBER OF CASES

The Domestic Service placements analyzed in this study were made over a 6 months period, the Industrial, over a period of a year. The Service study includes 375 placements, the Industrial study, 282, in both cases about 80 per cent of those placed during the periods mentioned.

SERVICE STUDY

In domestic service, of the 375 persons placed, three-fourths were rated satisfactory by their employers. Our first analysis was made of the specifications as given on the order. Of the 375 openings, 15 per cent were specified as temporary and the other 85 per cent were supposed to be permanent. Applicants usually do not like temporary jobs. However, it was found that 84 per cent of those who took temporary jobs were rated "satisfactory." Seventy-four per cent of those placed on permanent jobs were given this rating.

Eleven per cent of the jobs required employees to live off the premises and are what we call "live out" jobs. Although living out jobs are very much in demand, 70 per cent of those placed on them were rated "satisfactory" against 76 per cent of those who live in.

Another factor investigated was the effect of suburban locations. By suburban locations we mean any job beyond the city limits where extra fares are required. They may be in the immediate suburbs of the city or in rural communities. Suburban jobs

are always difficult to fill as most domestic workers wish to live within the city limits. Although it is difficult to find applicants willing to consider these jobs, when once they are located there is a slightly greater possibility of their giving satisfaction than those placed within the city limits. Furthermore, a smaller percentage of girls employed in the suburbs quit their jobs of their own volition than those employed in the city.

Having scanned job specifications, we next looked into our office procedure. Orders are considered "active" from the time of their receipt until an applicant has been accepted by an employer. In measuring this lapse of time, Sundays and holidays are excluded, and the date of the employer's acceptance of the applicant is used, rather than the date when she starts work.

It was discovered that 43 per cent of the placements were made on the same date as the receipt of the order; that 25 per cent of the placements were made the second day; and that a total of 76 per cent of all placements were made within the first three days of the receipt of the order. Only 13 per cent were made in the three days following, leaving but 11 per cent "active" beyond that time. As to the degree of success of these rapid selections it is noteworthy that 81 per cent of those persons placed on the same day as the receipt of the order are rated "satisfactory" and that of those placed on the two following days about 75 per cent are rated "satisfactory." Of all selections made within the first three days 79 per cent are "satisfactory." In the next three days the "satisfactory" rating drops to 72 per cent and subsequent selections are even less satisfactory. A composite of all placements made after the first three days shows that two-thirds are rated "satisfactory" and one-third "not satisfactory." Therefore, it would seem that delay in filling an order brings no improvement in the quality of the selection.

Another element enters into this situation. Cancellations of orders are numerous after the first day. Employers use many sources to locate applicants; newspaper ads, friends, and commercial agencies are among our competitors. The number of openings left to be filled after the first day dwindles rapidly. It is possible that the lower percentage of satisfactory placements is somewhat affected by the fact that the more difficult orders remain open after the first few days.

The average amount of time used by a placement officer in selecting a worker—later rated "satisfactory"—was 35 minutes, and 40 minutes for one later rated "unsatisfactory." However, this information was obtainable in only 156 instances and is hardly sufficient to warrant drawing any conclusions as to the relationship. Apparently the actual amount of time spent in filling an order does not have a very definite bearing on a prediction of satisfactory service.

There apparently is some difference in results when the placement officer who receives the order fills it and when a different one fills it. When the same placement officer who receives the order selects the applicant, the percentage of those rated "satisfac-

tory" is 78 per cent; and when a different placement officer makes the choice the percentage is 72 per cent.

On 65 per cent of the jobs only one applicant was referred. There is no material difference in the satisfaction rating of those employees selected from single or from multiple referrals.

It was thought personal factors might possibly have some bearing on satisfaction given by employees. One factor considered is age. The analysis shows that about three-fourths of those placed are under 45 years of age and 74 per cent of this group are satisfactory. Beyond this age there is an increase in the proportion rated satisfactory, 85 per cent of the older workers having this rating.

Whether American or foreign born, has little bearing, as the same percentage of foreign born and American born employees are rated "satisfactory."

The fact that a worker has had no previous household employment apparently makes little difference in her rating. Of those rated "satisfactory," 90 per cent had had previous household employment, while of those rated "unsatisfactory," 88 per cent had had previous experience of this type.

Wages paid on the jobs included in this study vary from $2.00 to $21.00 per week, plus maintenance. The median is $8.00 and the mode $5.00. In spite of this wide range the percentage of those rated "satisfactory" is approximately the same at all wage levels.

However, in considering wages it is interesting to get another point of view and analyze the reasons for separation from the job in these various wage ranges. Even though employees may be rated "satisfactory" by their employers, they do not necessarily remain on the job. We find that the proportion quitting in the wage groups under $12.00 is greater than those who are laid off, and the percentage of those who remain on the job is greater when paid $12.00 or more.

Turnover. It is well known that the rate of turnover is excessively high in Domestic Service. An analysis was made to discover which party initiated the separation. Our study indicated that out of every 100 workers, although rated "satisfactory" by their employers, 33 quit their jobs and 21 others were laid off by their employers within the first 6 months of employment. Of all placed, including both ratings, 34 out of 100 quit and 27 were laid off.

To understand better the causes of these terminations, it may be well to look at some of the definite reasons offered by both employers and employees. They are usually traits not discovered through references or interviews. Some of the causes of lay-offs, given by employers may be chargeable to lack of skill, such as:

"Insufficient experience"
"Untidy work"
"Experienced but lacking ability"
"Poor planner"
"Lack of strength for job"
"Slow"
"Too extravagant for family"
"General work O. K. but not satisfactory with children"

Others are definite personality factors. These include:

"Employee uncoöperative"

"Not able to take responsibility"
"Lazy"
"Untruthful"
"Too high toned for housework"
"Stays out late nights"
"General incompatability"
"Too sweet"
"Morals"
"Drinking"
"Dishonesty"
"Not domestic type"

Other reasons are:

"Too young"
"Illness"
"Financial difficulties of employer"

The employees' reasons for leaving include some personal ones:

"To be married"
"Returning to school"
"Physical handicap"
"Illness"

A number indicate their idea of unsatisfactory conditions. As with the personal traits of applicants, these conditions of work are not likely to appear during the interview with the employer. Employees' reasons include:

"Pay unsatisfactory for work"
"Hours too long"
"Too much work expected"
"Not enough to eat"
"Unheated rooms"
"Foreign customs"
"Live out; distance too great"
"Twelve hour duty; no rest periods"
"No free time except two afternoons and evenings a week"
"Employer's drinking"
"Employer's making home brew—leaving untidy kitchen"
"Employer's husband: coarse language; unwanted attentions"
"Too many bosses in home"
"Constant criticism; no appreciation of efforts"
"Unmannerly children"
"Nervous employers"
"Lack of suitable accommodations for entertaining"
"Indefinite dinner hours" (a golf season complaint)

These miscellaneous reasons, if more detail were known, might also be chargeable to conditions in the particular job:

"Needed at home" (a customary alibi)
"Left without notice"

From these causes of separations, it is very apparent that the element of personality, on both sides, plays a very important part when making satisfactory connections between workers and employers in private homes. Definite factors, such as those analyzed in the study, must always be considered in connection with those more elusive personality factors, and unfortunately there is no objective method by which these personality intangibles can be evaluated.

INDUSTRIAL STUDY

To realize what an entirely different picture industrial placement work presents, we find that of the industrial placements only 5 per cent were rated "unsatisfactory." Dissatisfaction was expressed in terms of poor work and employment was terminated within the first week. The limited number of persons rated "unsatisfactory" in the industrial group prevents one from showing relationships with the various factors. However, some

comparisons with the Service Section may indicate differences in methods of operation.

It takes an average of 30 minutes to make an industrial placement against an average of 36 minutes to make a service placement. Fifty-three per cent of the industrial placements are made the first day, as compared with 43 per cent of service placements, and 83 per cent within the first three days of the receipt of the order, against 76 per cent of the service placements.

The percentage of instances in which one person per job is referred is about the same in both sections, 69 per cent in the industrial and 65 per cent in the service.

Age distribution in the two sections shows that 81 per cent of the industrial applicants placed are under 35 years of age, while only 57 per cent of the service applicants placed are in this group.

Of the service workers, 11 per cent had had no housework experience. In the industrial group, 28 per cent had had no experience in the type of work for which they were employed. This figure is interesting in indicating the willingness of some employers to take inexperienced applicants counting on ability to adapt themselves to unfamiliar jobs. Of course, this does not hold true in highly skilled jobs.

Causes of separation offer quite a contrast with those of the Service group. It is noticeable that a personality factor seldom is the cause. About one-half (49 per cent) had been laid off on account of slack work and 4 per cent more because of poor workmanship. These lay-offs amount to 53 per cent against 35 per cent for the Service Section, which includes the few temporary jobs (8 per cent) which might be charged to "slack" work.

Voluntary resignations or "quits" in the Industrial Section are limited to 11 per cent, or only one-third of those in the Service Section. However, the large percentage of short time jobs probably affects these latter terminations producing an abnormal situation; so the small proportion quitting has little significance.

CONCLUSIONS

The analysis of this limited number of cases seems to indicate that:

In the selection of a domestic worker, there are but few elements predictive of success which can be controlled by the agency so long as traditional methods are followed.

Intimate knowledge of the personalties of both workers and employers is important in selecting compatible household workers.

A definite knowledge of the individual standards of work in each employer's home is necessary in order to select the best qualified workers.

Methods of measuring the skills of household workers are needed.

The unstandardized conditions in housework have some bearing on the amount of turnover in this field.

The similarity of standards in factories facilitates the selection of satisfactory workers.

The results would also seem to demonstrate the economy of the custom of giving full details of work and the advantage of observation through field trips to places of employment.

Whether the figures of the above

study justify these conclusions can only be determined through further comparative studies made later, and covering a considerably greater number of cases. They are submitted for what they are worth. It is hoped that the outlining of the technic used may help in future studies of similar character, either by reason of its acceptance or its change, if modifications seem desirable. It must also be left to the future to determine whether studies made under different economic conditions will show any considerable deviations in their conclusions from this study.

Report of a Program of Field Work in a Selected Industry

The above description has mentioned the part field work plays in the selection of satisfactory industrial workers. Some of the points mentioned in the industrial study are illustrated in the following account of a field work program carried on in one industry.

In July 1931 we saw advertisements in the daily paper for skilled workers for several Rochester plants representing one industry. In this particular industry there are six large factories each employing over 500 workers in a normally busy season. Besides these six plants there are about fifteen smaller factories manufacturing a similar line, and four factories which manufacture units used in the business. At least half of the force in each of these plants is made up of women. Because the demand was for women workers it was thought logical for the Women's Industrial Division to undertake a campaign to acquaint these employers with the possibilities of using the Public Employment Center to secure their workers.

Traditionally agencies have not been used by the industry. New workers have been usually acquired through newspaper advertisements, through friends of workers, and personal applications. This is a highly seasonable industry and workers return each season to provide the foundation group.

The number of advertisements appearing in the paper seemed to indicate that there was a dearth of highly skilled workers in this industry. So, calls were made on the executives of several of the larger plants to discover if this really was the case and if they would like us to assist them in finding other employees by contacting the other State offices outside of Rochester. Discussion of this problem proved the starting point of some very worthwhile coöperation between the industry and the Employment Center. The answer to this particular problem was: that local help only was desired, and that it was better to work over time or make any other necessary adjustments rather than import workers who might resent lay-offs at the end of the season.

This industry has a trade association in Rochester and the executives of the organization were interviewed relative to their willingness to work with

the Public Employment Center. However, this trade association is very inactive so there was no help from this source.

An organization supplying machinery to the industry was also approached. Its local office has always maintained an informal sort of placement service for the convenience of its customers. More definite help was received through this group and they expressed a willingness to refer qualified workers to the Center and to be used in an advisory capacity any time we felt their assistance would be of value. Inasmuch as its representatives visit the factories very frequently, this willingness to coöperate was very much appreciated and has proved valuable.

A definite program for field trips to all the plants was worked out in order to acquaint each one with our policies. Subsequently thirty-one field calls on plants in this industry were made by the two placement officers in the Women's Industrial Section. The methods of employment in the industry present a problem, as in no case is there a central employment department.

There are seven departments in each plant and each department has its own foreman. This is true of the six largest plants. In these large plants most of the girls are under one foreman although small groups are found in other departments. The smaller plants operate with a smaller supervisory force.

Usually first contacts were made through the superintendents or officers of the firm. This proved to be the wisest method of approach as these officers acted as sponsors and introduced us to the foremen. In reviewing the history of this field-work campaign one appreciates the gradual change from skepticism to full coöperation.

The process of gaining confidence had its interesting high spots. One of the employment problems of the industry is the acquisition of enough people to get out production in the peak season. Although a degree of personal friendship exists between the foremen of different plants, they try many methods to acquire workers, even though they may be employed by another firm at the time. The first fear of the foremen seemed to be that we also might shift workers from one plant to another without their knowledge. Personal visits with each foreman finally allayed these fears for we adopted a policy of frankness with them from the very start.

Foremen soon ceased advertising in the papers and called the Center when they needed extra workers. Because of the insufficient number of highly skilled workers available in a peak period, the policy of borrowing workers was adopted, borrowed, however, openly. If our reservoir of workers was depleted, when an employer was in need of a worker, we called another foreman and asked if he had any one skilled in the particular operation whom he could loan for a period, always telling him which plant was making the request. In this way many shifts were made for short periods of time, which kept operators employed during the variations of activity, which occur even in the busy period. As the beginning and ending of busy seasons vary in the different

plants, working seasons of employees were lengthened by referring them to other plants, after they had been laid off from one.

Eventually we had merited enough confidence so that foremen gave us the lists of applicants who had applied personally at the plant. The foremen had noted these workers names, feeling that they were worth calling later. We took these lists and wrote each applicant suggesting that she register at the Public Employment Center, in the letter giving the name of the foreman from whom we had obtained the applicant's name. The foremen often indicated the workers in whom they had a particular interest, and we made an arrangement with them to give them first chance to get these workers when the season opened. This proved one method of building up a reserve of good workers.

Another method was the use of introduction slips. We furnished each foreman with a pad of these slips and these he gave out to employees who were being laid off; and to applicants who came to apply for work, if he could not use them at the time. Of course, if any good workers came along at a time when he needed them, he employed them.

These introduction slips were also given to the girls at the information windows. The superintendent instructed these information girls to refer applicants to us, giving them the introduction slips signed with the name of the plant.

We also advertised in the classified section of the papers. We had to start by mentioning that the positions were in *local* plants, as we found many skeptics numbered among the applicants, also. They knew that this industry had never used agencies before; and they were frankly skeptical of any agency, feeling that it was corralling workers to send out of town.

In fact, one young women who came into the office and applied for work stated, in the middle of the registration, that she did not want work but had come down to see what it was all about. Her sister was a skilled operator in one of the larger factories and the girls there were very curious as to who we were and what we were doing. She said she didn't know what we were trying to do but she was sure that we had no jobs in this industry, as foremen never got their workers from an agency. We used this excellent opportunity to give the young woman the details of our plans, and to suggest that her sister talk with the foreman about us. This contact proved very beneficial and subsequently her sister developed into one of our most useful applicants, filling in, in several factories and sending us other good operators.

The foremen's coöperation was of the utmost importance in building up this confidence among applicants. They have since told us of the many questions they were asked about the Center.

During busy seasons, telephone contacts with each of the large plants are frequent and through them a very definite picture of conditions in each place is gained. We frequently take the initiative in calling, and ask foremen what operators they are likely to need within the next week, and upon getting this information we advertise,

or in other ways search out these workers. Our advertisements under such circumstances read something like this: "Fancy stitchers, French binders, etc., renew applications at the Public Employment Center." This does not indicate that we have a definite opening available, but does notify applicants who have allowed their registrations to lapse, that there is likely to be need for their services. At any time during the busy season when first-class operators register, we contact foremen whom we think will be interested. In this way we have furnished them with a number of worthwhile workers.

Foremen have notified us also when about to lay off a good worker, in order to discover if another foreman needs her services.

Either my associate or myself have visited every fitting room, and other departments where girls work, in each of the plants in Rochester. We have a very definite, although not working, knowledge of the operations used. When there is any question in our minds about an operation, we have free access to these workrooms where we can refresh our memories or discover the details of a new operation.

With only one plant did we have difficulty in working out plans. However, it was interesting to discover that in a short time this plant was calling and asking us for workers. Of course, they were almost forced to do this as we were working so closely with the other plants that the best workers were registering with us and getting positions in the plants which were using our services.

The results of all this activity do not loom very large in numbers but when one considers that previous to this campaign an occasional call for a beginner was the extent of the business from this industry and that since we started we have placed seventy-five women, mostly highly skilled, one realizes that some progress has been made.

Some headway has also been made in the matter of training regular workers in operations, other than those known, and in retraining workers out of the industry for some time. This problem is being met through the coöperation of one of the trade schools.

Other personnel problems have been taken up with the foremen—problems that have arisen out of speeding up production time. In peak periods a surplus of workers is kept waiting in the workroom against the arrival of work which must be rushed through. All plants suffer from this method of tying up workers, and the pay envelopes of the workers are very much reduced.

We have recently had the opportunity to use the information gained through this experience for the benefit of a new industry in Rochester.

One of our factories is developing a new line of products and finds the skilled workers in the old line industry of great use to them. It happened that they started in a dull season and were able to obtain excellent operators who had been temporarily laid off. However, the management did not realize that this was just their good fortune as they were unacquainted with the methods of operation in the other industry. As most of their operators have been obtained through the

Center, we recently had a conference with the production manager about these employment complications.

Now knowing the practices of the older industry, this manager is planning the work so that his program will harmonize with that of the other industry, arranging the production schedule to miss their peaks. By doing this employment periods for workers will be spread out, and neither industry will be crippled when workers are most needed.

It can readily be seen that the important results of this field work campaign are the coördination of employment activities and the development of the clearing-house idea. Of course, paralleling these results, is the employers' confidence in our interest and ability to serve them.

The results demonstrate how confidence in a public employment agency can be developed, how placement officers can be educated in an unfamiliar field and how traditional haphazard methods can be transmuted into economical, orderly employment procedures.

The foregoing description is given to demonstrate the part field work plays in blending a free employment service with the community in which it is located. Field work is continually being carried on by all departments of the Center in other selected industries and businesses so that this aim may be accomplished.

Serving Worker, Employer, and Community

By George E. Gill, *Indianapolis Employment Bureau*

The history of the Indianapolis Employment Bureau is told, and its accomplishments are enumerated. It is a community welfare agency, as well as an employment agency. The work of the staff on the Indianapolis "made-work" program is described. An enumeration of some of the problems of unemployed people is followed by an appeal for a national morale building program.

EIGHT years ago The Indianapolis Foundation turned over funds to a committee of local citizens to be used to maintain a free employment bureau for one year as a demonstration. The Foundation has since then annually appropriated funds to maintain this bureau.

So far as we know The Indianapolis Foundation was the first foundation to recognize unemployment as one of the outstanding problems of community life and to try to attack it in an organized and scientific way.

Our employment bureau is the outgrowth of a movement which started in the summer of 1922 when a small group of interested citizens began to meet more or less regularly. After several unsuccessful attempts to secure the cooperation of the state and city officials to establish a joint bureau the matter was placed before the board of trustees of The Indianapolis Foundation. This committee stated to The Foundation that the purpose of their organization was:

"to secure satisfactory employment for men and women applicants, to secure good workers for employers, to serve both employee and employer, and to provide against unemployment in Indianapolis."

Mr. Stanley Roth, who is known to some of you, was our first chairman, and before the bureau was opened he stated to the speaker that its function was "to facilitate employment in Indianapolis." The Secretary of the Board of State Charities, in recommending to the State Industrial Board that we be granted a permit to operate, said that he understood that we would, to use his words, "make a study of local conditions with regard to unemployment and labor turnover." These, therefore, were the conditions under which our bureau opened its doors September 1, 1924.

Our bureau from its inception has performed two functions; namely, employment agency function and community welfare function. One contribution we tried to make to the common good of our community was that of being elastic enough to pick up some of the loose ends not taken care of by other agencies, studying and dealing with them until more permanent ways

and means could be found to continue and develop such phases of community service. I recall such things as the agitation for the collection of local employment and unemployment statistics, the development of certain types of "made work," and the demonstration of the need for a community program to "pep up" persons whose employability is seriously affected by their lowered morale.

Any attempt to enumerate accomplishments brings to mind many intangibles and semi-intangibles. Let us think for a moment in terms of some of the incalculable results not ordinarily mentioned when statistics are given concerning registrations, help wanted calls, referrals, placements, return calls from applicants, persons advised but not registered, and employers contacted.

A very valuable service, we feel, has been rendered by our bureau in its attempt during the past 8 years to serve every person who came to it, each staff member using his or her best thought in advising, suggesting, and directing people where they could best function under existing economic, social, and civic conditions at that time in our city. Here are some of the things we tried to do, the value of which cannot be measured but which needed to be done. We have been:

Attempting to build up the morale of discouraged men and women whom we could not place.

Giving counsel to persons who asked for advice about their own personal plans, hopes, and ambitions.

Encouraging people to improve themselves and prepare for better jobs by taking advantage of extension courses, night school classes, correspondence courses, and the use of the public library —the business and technical branches particularly.

Advising applicants who have alleged grievances with respect to former employers just who to see regarding the settlement of such.

Advising out-of-town persons who cannot find work in their own home towns not to move to Indianapolis unless they have definite jobs to which to come.

Discouraging the settlement of non-residents who seem to be floaters.

Dissuading persons who are not very employable from bothering local employers when there are more capable workers available.

Advising people against a too ready belief in certain rumors, many of which are not only unfounded but are pernicious in nature, concerning local business conditions, employers, and civic-serving organizations.

In doing the foregoing it is obvious that many of our human contacts were ones in which apparently trivial problems were brought to us but in other instances the interviews were for much more serious and important purposes. We make no claims concerning the value of the information, advice, and counsel given by our bureau to persons seeking it. We do know, however, that we have learned much during the past 8 years from applicants themselves and we know that what happens to

one will frequently happen to another. If we can accumulate the combined experiences of hundreds of applicants and have it available to other applicants, we feel that we are accomplishing something in tapping this store of information. Many applicants tell us wherein they made mistakes. Employers state their preferences. Some persons tell us why they get promoted and employers say why they promote. Much of this is worthwhile to some other person.

Perhaps the most valuable service rendered to some persons, when everything seemed to be booming, was to cause them to think seriously before quitting their jobs. Of the 16,000 persons whom we did not register as applicants for employment but to whom we have given counsel, advice, and information were many who wanted to talk over the advisability of their making a change. In times of prosperity most every one who works for some one else has spells of dissatisfaction with his job. This dissatisfaction ranges from the laudable ambition which makes one want to grow to the discontent which later develops into despondency. Personnel managers know what it means to the worker to be able to pour out his whole story which often involves domestic relations in addition to economic and social problems. Many workers do not have well organized personnal departments to which they can turn. In good times when a man has a steady job he is always hearing about another firm which pays a higher wage. He hesitates to go to his employer but at home his wife tells him he is a "fool to work at his present wage" and that he should not be such an "easy mark." In such a predicament more than one person holding what, we felt, was a good position, has come to our bureau to talk over the advisability of his making a change. He may have wanted to satisfy himself concerning the value of his present position without jeopardizing it, he may have wanted to know about the policies of another local firm engaged in an entirely different line or he may have been seeking information concerning the opportunities with certain competitors of his present employer.

From the first day of our activities we have kept complete records bearing in mind that they would always be helpful to anyone in our city who had a good reason to use them. Their value has been proven in many ways. In our files are the original application blanks of practically every person who has filled one out—over 32,000 of them. On the backs of these 32,000 blanks are many entries made by staff members over the period they have been known to our office. We have an intimate knowledge of many of our applicants which has been used by employers and social agencies many times. Such entries coming from former employers as "best stenographer we've had in a long time," "grouchy and a clock watcher," "very capable and willing," "girl crazy;" or such pencil notations by staff members as "always cheerful," "too much perfume," "thinks every one critical of her," "carries good magazines;" or newspaper clippings on back of blanks or in our confidential file with such headings as "Sentenced to Prison on Narcotic Charge," "Wins Scholarship," "Tries to Kill Wife,"

or "Chairman of Ticket Sales Committee" all have value when we have occasion again to try to consider the applicant for some specific position.

An advantage of keeping accurate and detailed records has been the opportunities they afforded for studies from time to time to be made of job seekers and of jobs seeking workers. We know, for instance, how the age distribution of applicants in 1925 compares with that of 1932, what per cent of our applicants we considered as recommendable in good times and how this compared with the per cent in bad times, the number and kind of local social agencies to which some of our most unemployable applicants are known, how applicants learned about our bureau, the number of counties in our state furnishing the greater number of applicants each month, something of the recommendability of residents versus non-resident applicants, the per cent of stenographers with less than high high school education who were unemployed in times when jobs were more plentiful, the relative effect on the ease of filling domestic jobs when residence at the place of work was required, optional, or not desired by the employer, and so on.

Most of the findings referred to above were given in reports made at the monthly meetings of our Board of Directors and much of this data was made public through the annual reports published during the first five years of our activity. In this manner these data became disseminated throughout our city.

From the beginning of our bureau the director has made many talks to local groups, the subject matter of which varied according to the special interest of the group. The high school students wanted to know how to get a job and make progress in it. The college business club and the Junior Chamber of Commerce wanted to hear why employers hire, fire, and promote. Local technological unemployment was of interest to the engineering society. The church group wanted a talk on human waste in industry. During the past two years many groups have been interested in knowing more about our "made work" project. Most of the above have been effective in helping in some way—either directly or indirectly—to facilitate employment in Indianapolis.

Pamphlets on "Involuntary Unemployment" and "A Proposal for Solving Unemployment" were prepared by sub-committees and were widely distributed.

As was the case in other cities representative citizens in Indianapolis in the spring of 1930 formed a Commission for Stabilization of Employment. Our board members and staff were active in the preliminary work which resulted in the formation of the commission. I think I am safe in saying that our board members carried to the larger group and to the community a rather intimate knowledge of many of the problems facing the commission, which knowledge has been frequently utilized during the past two years.

The fact that the board of directors of our bureau had given considerable thought to local employment and unemployment problems made it possible for the "made work" idea to get serious and intelligent consideration, when in the spring of 1930 it became

evident that something should be done in our city. Our "made work" project began to function two years ago this month. The speaker had been working on preliminary plans during the summer of 1930 and was at the request of the Emergency Work Committee, Inc., loaned to it as manager. The board not only loaned him but personnel and equipment as well.

Our "made work" project started out with this purpose, to quote from our preliminary plan of action, namely:

> "to permit persons applying to the relief agencies in Indianapolis to work for at least a part of the relief given them, working at a lower wage than the prevailing one and doing useful work for public and semi-public institutions not provided for in their budgets,"

and to quote further, our plan said:

> "The community will be served by this project in three ways, namely:
> (1) Giving applicants for relief a chance to do some useful work, thereby building up their morale
> (2) Helping public and semi-public institutions get useful work done which otherwise could not have been done due to lack of funds, and
> (3) Helping in specific instances to determine the eligibility of the applicant for relief."

This project has involved the utilization of personnel, production, and accounting methods. We are faced with many of the problems which confront those of you who are personnel managers. We select workers for the jobs open, place them on the job, follow up to see that they become adjusted to their surroundings, try to keep up their spirits, inspire them to do their best, promote some, demote others, and see to it that everything works smoothly—having in mind the best interests of the worker, employer, and the community.

Time will not permit my mentioning the philosophy underlying our "made work" project, its problems, plan of operation and results accomplished. Had I the time I would tell you something about the 4400 different men now working one and two days per week for food and supplies furnished them by the township trustee, who in Indiana is by law overseer of the poor; give you data on the turnover of the 10,000 different men who have done "made work" since the first of this year; and enumerate the 55 public and semi-public departments and organizations using these workers to do useful work not provided for in their budgets. I would then point out some of the completed jobs, telling you about non-spectacular, as well as some of the show places, mention that approximately 4 million hours of labor have in the past two years been made available to our public and semi-public departments and organizations through the Emergency Work Committee, for the express purpose of making our city and its environs more healthful, safer, and more beautiful.

Each succeeding year a different set of constantly changing social, economic and civic conditions have faced our Emergency Work Committee and we have had to adjust ourselves to some very stern realities. We have to bear in mind that there are three vitally interested groups of persons in this project, namely the men doing "made work;" the social and relief agencies dealing with these men; and the persons and companies who actually pay

the relief bills. We know that the social agency executive is seriously concerned about the future of the people with whom he or she deals. Taxpayers and contributers to the Community Fund are perhaps more concerned now than ever before in wanting their tax money and contributions to do the best possible good for the community. Many of the men doing "made work" are now subject to conditions, the like of which they have never experienced. It is important that their morale be kept up.

When I think of these three groups of persons and realize that each sees "made work" from its own point of view, I realize how hard it is to try to serve well each group and the whole community at the same time. We do not know just what new problems will face us this winter. We are trying to observe the trends but know too little about them to make any prophesies.

It is obvious that the man seeking employment needs self-assurance. This is why we feel that any attempts to bolster up a man's morale do not go entirely unrewarded. "Pepping up" a man, however, must be something more substantial than patting him on the back and making a few generalizations about the futility of worry. He needs a definite sales quota on which to work.

What does he encounter even in good times when he seeks a connection? Job seeking is not easy. Self assertion will appeal to some employers, modesty to others. Not all persons who employ people are good judges of ability. The experienced personnel man, superintendent, or office manager, of course, knows how to "size up" applicants but many prospective employers, however, are inexperienced in such. Some are younger in age and experience than the applicants. Some employers have definite prejudices based upon little things. Many are tolerant but some are conceited and their vanity must be "played up to." Some are academic and judge people by their formal schooling. Others are products as they term it of the "school of hard knocks" and look upon the college man in a questioning frame of mind. Just how to approach the employer and how to act during the interview becomes a problem that faces every job-seeker.

Many persons, we find, seem to depend on their friends and acquaintances to get them jobs. Every time they hear that one of their friends or acquaintances has been elevated to a position of responsibility they at once begin to think about his being able to give them a better job than the one they have. This feeling that "maybe he can do something for me" gets so deep-rooted in some that it works to their disadvantage. It stifles their initiative. Many a heartache has been caused the person who thought somebody else was "looking out for a job for him" only to find that no results ever came. We have suggested to many an applicant, who has told us that several persons were looking out for him, that there were but very few persons who were sufficiently interested in him to put themselves out in his behalf, particularly at a time when they wanted to do their own jobs well and did not want to be using their time in trying to help some one else.

Many men today imagine themselves in the "not wanted" class. They meet

others who are also unemployed and they freely swap experiences and discuss their troubles. The morale of these people is a national asset. The loss of it means the loss of many dollars to business, industry, and the professions which serve these people. Once a man's morale starts to slip his earning power begins to slip also. It is easy to get into a "don't care" attitude.

A man's lowered morale is not always apparent even to a casual acquaintance but its destructive work goes on and on. How many are infected no one knows.

Much could be done to cause unemployed people to think more about their assets—qualities like experience, skill, judgment, and other characteristics which make them desirable employees. Too frequently they enumerate the reasons why they are not as valuable to employers as they once were.

A definite program to keep up the spirits of these men could be quietly started. It would grow. Such a morale-building program has big possibilities. It could do much to increase and prolong the earning power of all classes and kinds of workers.

The medical service and health propaganda of insurance companies have no doubt produced results—results for everybody concerned. Next to health, perhaps, there is nothing more important to most men than the economic and social welfare of their families. A man's employment directly affects the well-being of his family.

Information, suggestions, and advice, therefore, on how to keep more steadily employed should and would be appreciated and utilized by many. The beginner just out of school, the young person with a few years of experience, and the more mature worker all need to learn more about their jobs, the companies for which they work, and the industries of which their firms are a part. This will help them to become more valuable to themselves, their employers, and their communities.

Occupational Ability Patterns

By M. R. Trabue,[1] *University of Minnesota Employment Stabilization Research Institute*

Work of the Committee on Individual Diagnosis and Training in the Minnesota Employment Stabilization Research Institute indicates that people who are successful in a given occupation tend to have definite patterns of ability, distinctive from those in most other occupations. Figures demonstrate the patterns found in several occupations.

THE Committee on Individual Diagnosis and Training in the Employment Stabilization Research Institute at the University of Minnesota was faced in April, 1931, with the task of classifying occupationally a group of about four thousand unemployed persons whose histories were to be analyzed statistically and studied intensively by the various divisions of the Institute. Questions as to the relative percentages of unemployed persons who are unemployed because of the general financial depression, because of technological changes in industry, because of occupational inefficiency, and because of other specific conditions could not be answered satisfactorily until the fundamental cause of unemployment had been determined for each individual in the sample population to be studied.

However great a psychologist's confidence in his own judgment is reputed to be, no one of us was willing to accept the responsibility for making these final decisions regarding individual cases, which were to serve as the fundamental bases for making statistical reports on the real causes of the present unemployment situation and for making serious proposals regarding practical methods of correcting it. We insisted upon having the help, not only of objective records of as many different characteristics of each unemployed individual as possible, but also on having assistance in forming our judgments from experts in as many different fields of experience and thought as possible.

The records collected for each unemployed person have therefore included: (a) a complete occupational history of the individual, supplemented by vocational, social, personal, and family data, obtained from the individual, from his former employers, and from the various social agencies with which he had come in contact; (b) thorough examinations of physical health and strength, supplemented by such clinical, x-ray, and bacteriological examinations as were found necessary; (c) objective records of educational and intellectual achievements; (d) tests of clerical speed and accuracy; (e) meas-

[1] Paper read before the American Psychological Association meeting held at Ithaca, September 9, 1932.

ures of dexterity with fingers and hands; (f) tests of mechanical ability; (g) interests claimed, and interest patterns revealed by tests; and (h) personality as revealed by personal interviews and by personality-pattern tests. The specific measuring or recording devices used in each of these fields were chosen from among those which had proved most valid and reliable in previous investigations. No serious attempt was made to develop new measuring instruments for special use in this study.

The occupational adjustment of each unemployed individual was considered in a daily staff conference, which was attended not only by psychologists, but also by physicians, economists, sociologists, social case workers, representatives of the public employment offices, and specialists in commercial, industrial, and general education. For this conference it was necessary to devise some convenient means of presenting the data regarding an individual case with maximum accuracy, clarity, completeness, and speed. In order to obtain a useful group judgment regarding an unemployed case, it was desirable to make all members of the staff conference fully aware of the special strengths and weaknesses in his record. Original test scores mean relatively little, even to a psychologist, without comparative records obtained from other individuals or groups of known character. It was obvious that some graphic means of interpreting the results of the tests was needed, and that a common unit for the interpretation of all the various tests was desirable.

The common unit chosen for interpreting the scores obtained by an unemployed individual was the estimated distribution of scores for the total adult white population of the same sex. Each score was interpreted, therefore, in terms of the percentage of the total adult population that would probably make a lower score on the same test. This "percentile method" of interpreting test scores lends itself readily to graphic presentation, is easily understood by non-mathematical minds, and brings out fairly clearly the different fields in which an individual's scores are either high or low. While one can be sure that the actual distribution of scores for the total adult population would not correspond exactly with the estimates we prepared from available samplings, the use of carefully estimated total distributions has, for our purposes, many advantages over the somewhat more reliable "standards" which had previously been obtained from testing special groups of people, each group with a different test. As more adequate evidence becomes available regarding the actual distribution in the total population of the scores on each test, only slight changes will be necessary in the interpretation of any particular person's score.

By placing the graphic representations of percentile scores from different tests on the same chart, an instructive profile or pattern of abilities becomes available. Figure 1, for example, represents the scores obtained by a girl who has graduated from high school, but who possesses only eighth-grade intellectual ability. While her history shows that she spent four years studying typewriting, sten-

ography, and bookkeeping, the tests show that she has extremely low clerical abilities. The only ability in which her test scores are higher than the average adult is finger dexterity. She has now been out of high school for two and a half years, but packing cookies in a baking plant is the only job she has been able to hold for more than three months. Her scores on the Bernreuter Personality Inventory seem to indicate that she is a decided extrovert, and unusually submissive. Her social history agrees thoroughly with these interpretations of her scores.

Similarities in the profile charts obtained from testing persons whose occupational histories were similar encouraged us in our plan to test sample groups of employed persons from various ocupations. In making these tests of employed persons, we were seeking answers to such questions as these:—Does the successful salesgirl in a department store have a distinctive ability-profile which is different from that possessed by her sister who is effectively employed in the clerical office of the same store? Would it be possible to discover characteristic patterns of ability scores for the various occupational groups?

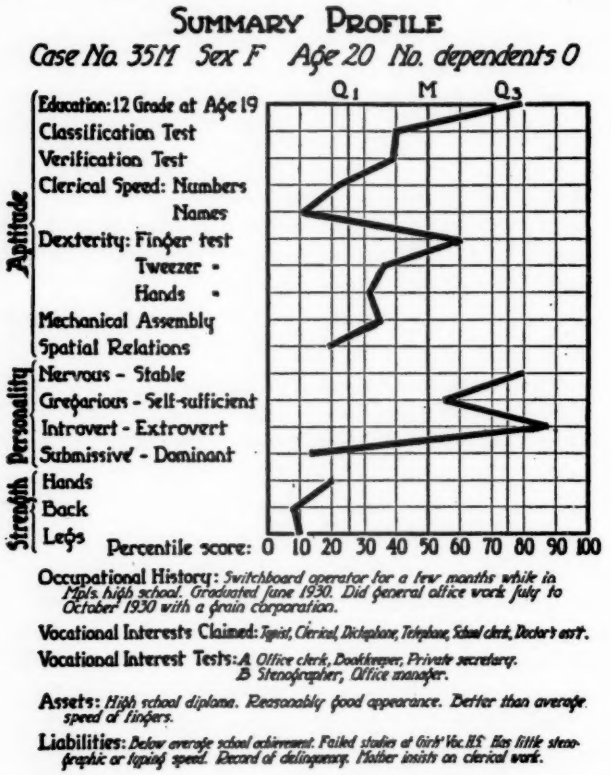
SUMMARY PROFILE
Case No. 351 Sex F Age 20 No. dependents 0
Q1 M Q3
Aptitude
Education: 12 Grade at Age 19
Classification Test
Verification Test
Clerical Speed: Numbers
Names
Dexterity: Finger test
Tweezer "
Hands "
Mechanical Assembly
Spatial Relations
Personality
Nervous - Stable
Gregarious - Self-sufficient
Introvert - Extrovert
Submissive - Dominant
Strength
Hands
Back
Legs
Percentile score: 0 10 20 30 40 50 60 70 80 90 100
Occupational History: Switchboard operator for a few months while in Mpls. high school. Graduated June 1930. Did general office work July to October 1930 with a grain corporation.
Vocational Interests Claimed: Typist, Clerical, Dictaphone, Telephone, School clerk, Doctor's asst.
Vocational Interest Tests: A Office clerk, Bookkeeper, Private secretary.
B Stenographer, Office manager.
Assets: High school diploma. Reasonably good appearance. Better than average speed of fingers.
Liabilities: Below average school achievement. Failed studies at Girls' Voc. H.S. Has little stenographic or typing speed. Record of delinquency. Mother insists on clerical work.

FIG. 1. MEASURED CHARACTERISTICS OF AN UNEMPLOYED HIGH SCHOOL GRADUATE WITH FOUR YEARS OF TRAINING IN CLERICAL WORK

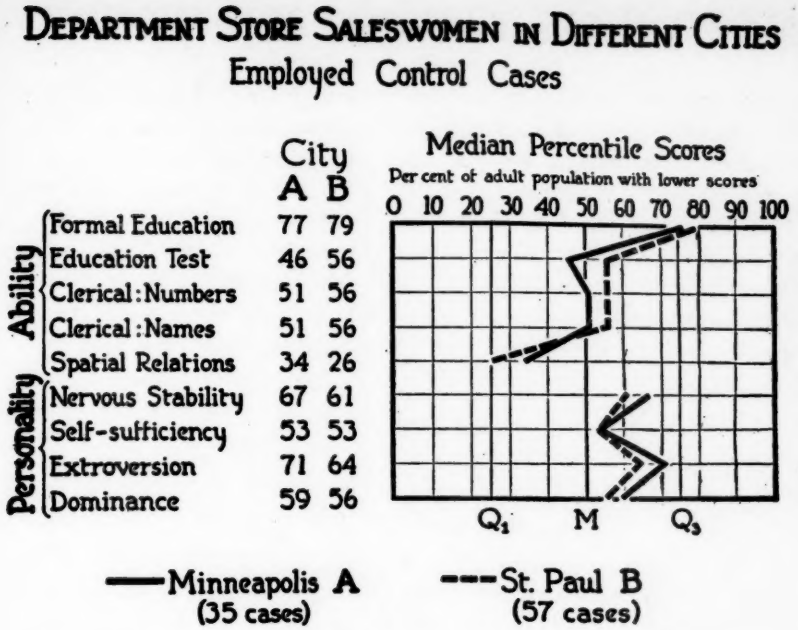

FIG. 2. SIMILAR AVERAGE SCORES OF SUCCESSFUL SALESGIRLS IN DIFFERENT DEPARTMENT STORES

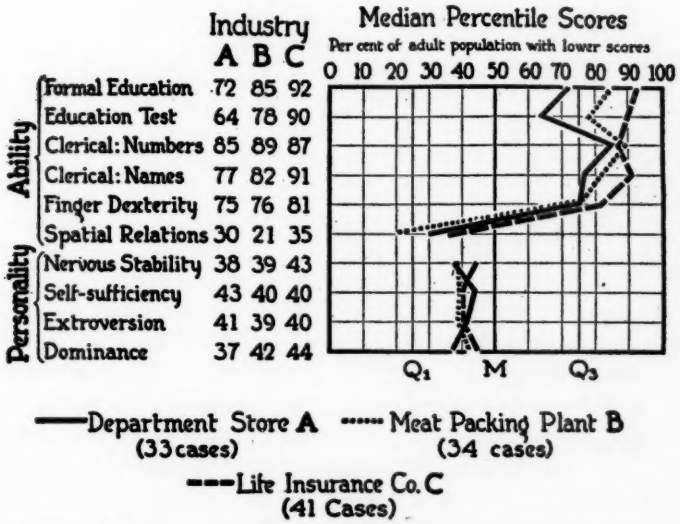
GENERAL CLERICAL WORKERS IN DIFFERENT INDUSTRIES
Employed Control Cases
Industry
A B C
Ability
Formal Education 72 85 92
Education Test 64 78 90
Clerical: Numbers 85 89 87
Clerical: Names 77 82 91
Finger Dexterity 75 76 81
Spatial Relations 30 21 35
Personality
Nervous Stability 38 39 43
Self-sufficiency 43 40 40
Extroversion 41 39 40
Dominance 37 42 44
Median Percentile Scores
Per cent of adult population with lower scores
0 10 20 30 40 50 60 70 80 90 100
Q1 M Q3
Department Store A
(33 cases)
Meat Packing Plant B
(34 cases)
Life Insurance Co. C
(41 Cases)

FIG. 3. SIMILAR AVERAGE SCORES OF SUCCESSFUL CLERICAL WORKERS IN THREE DISTINCT INDUSTRIES

Note the differences in intellectual levels and the similarities in clerical and personality measures.

Figure 2 shows the median percentile scores for two groups of department-store salesgirls. In spite of the fact that the two stores are in different cities and have absolutely no connection with each other, the pattern of average ability and personality is the same in both cases. Most of these girls had graduated from high school, but on the objective educational tests they revealed only average intellectual achievements. They are indistinguishable from the average individual, also, in their clerical abilities. In such mechanical abilities as are measured by the Spatial Relations Tests, these salesgirls are below the average person. In personality test scores, these girls seem to be relatively stable and extrovert. Since this chart was prepared, essentially the same occupational profile has been obtained from a third group of salesgirls in still another city.

Figure 3 shows the median percentile scores for three distinct groups of clerical workers. In the Spatial Relations Test these clerical workers have scores which are indistinguishable from those of salesgirls, but in the Personality Inventory, in clerical abilities, and in educational achievements, they are decidedly different. The life insurance company will not employ in its clerical staff anyone whose grades were not in the highest quarter of the graduating class at high school, while the department store accepts from the outside or promotes from its sales force any girl who proves that she can do the clerical work effectively. Success and retention in general clerical service seem to

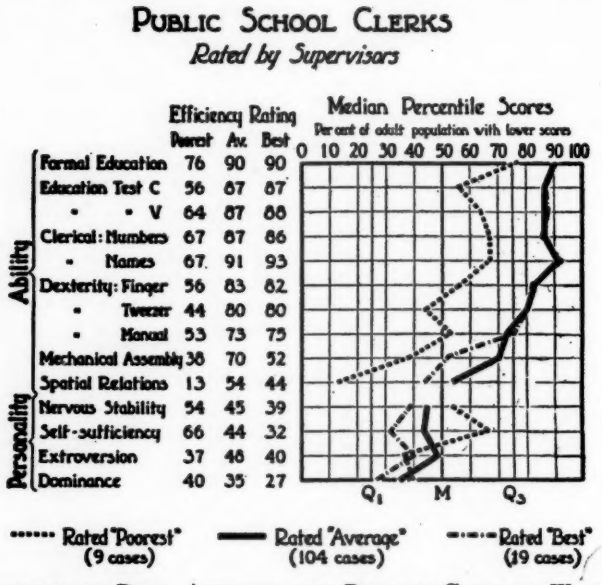
PUBLIC SCHOOL CLERKS
Rated by Supervisors
Efficiency Rating
Poorest Av. Best
Median Percentile Scores
Per cent of adult population with lower score
0 10 20 30 40 50 60 70 80 90 100
Ability
Personality
Formal Education 76 90 90
Education Test C 56 67 67
" " V 64 67 66
Clerical: Numbers 67 67 66
" Names 67 91 93
Dexterity: Finger 56 83 82
" Tweezer 44 80 80
" Manual 53 73 73
Mechanical Assembly 38 70 52
Spatial Relations 13 54 44
Nervous Stability 54 45 39
Self-sufficiency 66 44 32
Extroversion 37 48 40
Dominance 40 35 27
Q1
M
Q3
Rated "Poorest" (9 cases)
Rated "Average" (104 cases)
Rated "Best" (19 cases)

FIG. 4. COMPARISON OF BEST, AVERAGE, AND POOREST CLERICAL WORKERS IN THE SAME INDUSTRY

Note the similarity of best and average workers, except in personality. Being "typical of the occupation" is better than being "high" in one's scores.

select girls who have similar personality scores and similar scores in the number checking test, regardless of the diverse methods by which they may have been recruited.

Figure 4 is based upon the examination of two hundred and forty-three clerical workers in still another industry, a city school system. The supervisor of clerical service and an assistant superintendent of schools who knew these workers sorted them into five groups:

a. Most responsible positions	19 cases
b. Better than average	68 cases
c. Average ability	104 cases
d. Slightly below average	37 cases
e. Least responsible positions	9 cases

The chart shows the median scores for the highest, the lowest, and the average groups. On hundred and five cases that differ only slightly from the average are not represented here. It is interesting to observe that there is very little difference on this chart between the scores of the average group and the scores of the best group, except in "personality." The best group is, according to Bernreuter's Personality Inventory, less "stable" and less "self-sufficient" than the average group. In other words, the school clerks who are rated highest and promoted to the best positions have personalities that are like those of the clerical workers in industry and in trade. Perhaps this is only another way of saying that school principals are like business men in desiring and in promoting clerical workers who are not too "self-sufficient."

Figure 5 represents the scores made by one hundred and twenty-four city

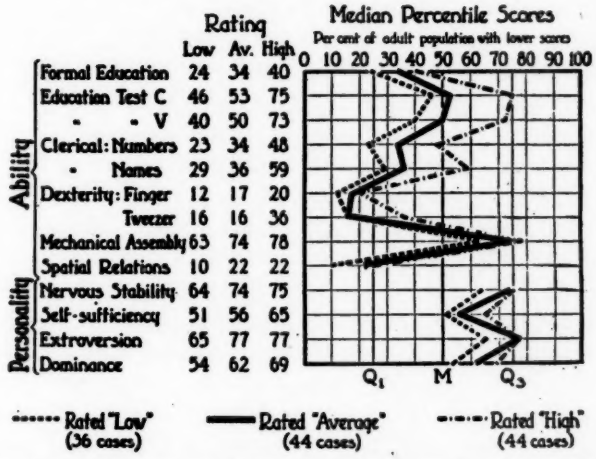
CITY POLICEMEN
Effectiveness rated by Senior Captain
Rating
Low Av. High
Median Percentile Scores
Per cent of adult population with lower scores
0 10 20 30 40 50 60 70 80 90 100
Ability
Formal Education 24 34 40
Education Test C 46 53 75
" " V 40 50 73
Clerical: Numbers 23 34 48
" Names 29 36 59
Dexterity: Finger 12 17 20
Tweezer 16 16 36
Mechanical Assembly 63 74 78
Spatial Relations 10 22 22
Personality
Nervous Stability 64 74 75
Self-sufficiency 51 56 65
Extroversion 65 77 77
Dominance 54 62 69
Q1 M Q3
Rated "Low" (36 cases)
Rated "Average" (44 cases)
Rated "High" (44 cases)

FIG. 5. COMPARISON OF GOOD, AVERAGE, AND POOR POLICEMEN

Intelligence and clerical ability seem to attract higher ratings from this supervisory officer.

policemen. These men were rated as to their general value to the police force by the senior captain, who knew each man personally and was thoroughly familiar with his work. In this chart we have combined into a "high" group the forty-four men who received the highest ratings, and into a "low" group the thirty-six men who received the lowest ratings. The chief differences seem to lie in the higher educational scores and better clerical scores of the policemen who were rated "high."

The policeman's profile on the Personality Inventory seems to be very similar to that of the department-store salesgirl. The average policeman and the average salesgirl make approximately the same scores on the educational tests, also, but the salesgirl has had a high-school education while the policeman has had only a seventh- or eighth-grade education. In mechanical assembly scores the policemen are much like a certain group of factory assemblers, but the two groups differ widely in finger dexterity.

While the total number of employed persons tested by the Employment Stabilization Research Institute is well over fifteen hundred, such a large proportion of them cannot be definitely classified as typical of any recognized occupation that we have obtained a relatively small number of distinctive and well-established occupational-ability profiles. Our experience in deriving these profiles and in using them in the guidance of unemployed persons leads us to believe, however, that they have real significance and guidance value.

The ability-profiles tend to correct very definitely the popular conception that high scores are desirable in every test for every occupation. The girls who make high scores on the educational tests, for example, sell a smaller quantity of goods in a department store than the girls who make only average scores. Similarly, high clerical speed and accuracy seem to be a definite handicap to one's success as a salesgirl, just as high "self-sufficiency" and "dominance" are handicaps to one's success as a general clerical worker. The concept of *typicalness* should be substituted for that of *superiority* in the interpretation of test scores for occupational guidance and selection.

E. K. Strong and others have demonstrated the vocational significance of interest patterns. Our experience indicates that those people who are successful and happy in a given occupation have definite and distinctive patterns of ability as well as distinctive patterns of interest. Further study is needed to determine the extent to which these characteristic ability patterns are native or acquired, but they do seem to be very real and measurable. A young person who possesses the distinctive ability and interest patterns of the adult clerical worker may properly be advised against entering the city police force or a department store sales force, although it is doubtful whether anyone could as yet be sure that this young person would not some day be an executive in some large industry.

The ability patterns for some occupations are very much alike, while those for other occupations are decidedly different. It seems probable that

there are definite families of occupations, and that one occupation in the family calls for almost exactly the same patterns of ability as any other, although the specific knowledge or skill required in the two occupations may be quite different. Perhaps a reorganization of our entire scheme for classifying occupations might profitably be based upon such tested ability, personality, and interest patterns.

In any case, much more extensive research is needed in these fields. A larger variety of tests, a wider geographical and occupational distribution of employed persons tested, and more reliable criteria of happiness and success on the job are very definitely needed. Our chief concern at Minnesota has been with the classification of unemployed adults, many of whom were in great need of occupational guidance. Typical occupational-ability profiles are needed just as much, however, by all those who are seriously concerned with the guidance or instruction of young people. We believe that we have been experimenting with a decidedly useful approach to an important problem in applied psychology.

Abilities of Older Men

By Walter R. Miles, *Yale University, Institute of Human Relations*

Age curves, showing ability at different ages from 10 to 89, are given. Functions measured were visual acuteness, mobility, immediate memory, judgment for position, and "good judgment." Maximum performance ability in a wide range of functions usually occurs between ages 18 and 49 and as a rule in the earlier half of this period. The decline is not precipitous but progressive throughout later adult life. Ten to twenty-five per cent of the men classified in later maturity and old-age groups are able to do as well in most tests as the average in the middle maturity or most efficient group.

A COMPLETE human psychology demands that we study behavior and all our mental tendencies not abstractly but concretely in each of the successive decades of life. What has been done in the last forty years by way of discovering and applying the facts and principles of individual differences to the practical concerns for childhood and youth largely remains to be done for the periods of maturity, later maturity, and old age. Arbitrary rules in reference to employment and retirement will of necessity continue in force until we have achieved a scientific foundation on which we can erect more discriminating procedures. Professional training has had a long history, selection of personnel for such training and placement is relatively new, and we have not yet started on the third phase of this human adjustment project, that is, on the training of people for life as a whole including as it must the later curtailment of and retirement from gainful occupational pursuits and at the same time the development and strengthening of other life activity streams.

Industrial and professional life as embodied in concrete individuals is built up of psychological capacities and interests plus learning and experience. We see many successful and unsuccessful, fortunate and unfortunate examples. How to rescue the unfortunate and unsuccessful and how in the various life development stages to insure success in a particular instance is at present a dark problem. It seems to me that one of our most pressing needs is for information concerning the characteristic contour of many psychological abilities in their entire reach from youth to old age. Such portrayals of man's typical changes from decade to decade throughout the life span should open up many new possibilities in the realm of human engineering. A series of studies in Later Maturity at Stanford University are an effort to contribute to this psychological plotting of abilities in adulthood. The investiga-

tion has been conducted on somewhat more than 2000 adults, each of whom was tested individually during a period of two hours or more. In securing subjects I have made use of spontaneous social groups and have made educational level the chief criterion for selecting representative American populations. The adults who aided the research by taking part as subjects served out of loyalty to their own particular societies and clubs, and these in turn were rewarded according to the number and age of the individuals they contributed.

It is obvious that there are a great number of capacities or functions one would like to investigate in a study of adult abilities. Fortunately it has been found unnecessary to make the tests long in order to reveal their connection with age. It is therefore possible to combine quite a number of measurements in a battery which can be completed within a 2 hour research period. I cannot, of course, report here all of the measurements and resultant findings. I shall try to give some sample and characteristic results. A table of selected measures presented in terms of age in duo-decade intervals will serve to show the trends regularly found. A rapid rise of ability or capacity during childhood and youth comes to its maximum usually in the period between 18 and 30 years of age. After this crest there is at first a slow decline, then beyond age 65 or 70 a rather rapid fall. One is impressed by the fact that the total range of the curve for a mental or a mental-physical function as given in terms of the mean for

TABLE 1

Average scores for representative psychological capacities throughout human life

MEASURED CAPACITIES	AGE GROUPS OF MEN (POPULATION = 324)				
	B (31) 10–17	C (49) 18–29	D (79) 30–49	E (111) 50–69	F (54) 70–89
Visual Acuteness*	100	98	96	77	48
Motility:					
Rotary Speed†	148	170	169	150	129
Reach Precision‡	1.30	1.20	1.23	1.34	1.68
Hand Promptness‡	0.23	0.21	0.21	0.20	0.26
Foot Promptness‡	0.26	0.21	0.21	0.22	0.28
Immediate Memory§	60	76	80	51	37
Judgment for Position¶	57	76	79	67	54
"Good Judgment"‖	32	41	34	29	23

* Measured with glasses if regularly worn. The score means are in terms of relative per cent.

† Number of quarter turns of the crank of a small hand-drill mechanism executed by the dominant hand in 10 seconds.

‡ Score in terms of seconds.

§ Number of letters correctly coded in 5 minutes.

¶ Accuracy in judging spatial relations. Perfect score equals 100.

‖ An intelligence test. Score given in number of correct items. Perfect score equals 60.

successive semi-decades is relatively small, but it is of course just this slight difference which applied cumulatively distinguishes older from younger workers as a whole.

The averages for eight measures appear in table 1, with captions at the left naming the capacities in question. The population reported here of 324 males has been divided into five age groups, B, C, D, E, and F. Subjects under 10 or over 90 years of age are not considered in this table. It may be observed that 165 of the subjects were 50 years old or older and 54 of them were 70 years of age or older. The scores or mean values entered in this table must be interpreted in reference to the specific measurement i.e., sometimes a high score is a better score as in visual acuteness, rotary speed, immediate memory, judgment for position and "good judgment." Sometimes a low score is a better score as in reach precision, hand promptness and foot promptness. We may consider the results in order.

Visual acuteness, fundamental for practically all successful industrial activity, is tested by means of reading charts for far and near distance, with the use of glasses if the subject was in the habit of using them, and shows very slight decline from B to C to D, but a rather definite decrement in groups E and F, 77 and 48 per cent respectively of the average for group B. The visual function measured here is primarily physiological and the curve of this function in adulthood may be taken as typical of physiological changes occurring with age: they are irreversible effects which show a rather steady progression from early adulthood to late age.

Four measures of functions basic for the manipulation of machinery, and to some extent in the clerical occupations, are included under the general head of motility. (1) Rotary speed represents the number of quarter turns that could be executed on a small wheel by the dominant hand in a period of 10 seconds. Age group B was able to do only 87 per cent as much as age group C. The performance for D was almost at the level of C; E did 88 per cent and F 76 per cent as well as the C group. (2) Reach precision represents speed in reaching, grasping and specifically placing an object. The score is in terms of seconds and the range of the means is relatively large. Group C is significantly ahead of B and the curve for the age averages is very smooth. (3) Hand promptness and (4) foot promptness are in both cases simple reactions to a clearly heard stimulus by releasing a key which is held down by the finger or by the foot. Here the total range between the means is relatively small. The mean values for C and D are practically indistinguishable but with the less promptly performing (older) groups the foot reaction is slower than the hand.

Immediate memory, obviously a primary essential to both subordinate and superior workers, was measured in terms of ability to manipulate letters of the alphabet by converting them into a code of other letters. Here it was very easy to forget what letter or letters one had started with. The score averages are in terms of number of letters properly transposed in five minutes. It is seen that Group D comes out distinctly ahead. The amount of lead B has over C is rather

slight but quite large as compared to B's score and also E's. The decrement in the case of F is quite conspicuous.

Judgment of position is a requisite to the comprehension of relationships. A good degree of skill of this kind is essential in all construction and engineering pursuits. The test of this ability demands comparison of isolated items in one space field in terms of an adjoining space field of a different scale. Here again Group D is slightly in the lead over Group C and definitely ahead of E and B. The task used was difficult enough to be highly differential. It was not measured in terms of speed but wholly on the basis of the quality of judgment and decision.

Finally we have the measurement termed "Good Judgment." This was really a brief test of practical intelligence plus speed, consisting of 60 varied items, the score being the number of items correctly marked. The five age groups follow a regular course from a maximum in group C over a gradual decline to E and a sharper fall to F. A large part of this decline may be attributed to the speed factor. When speed is eliminated intelligence as such declines far less.

Typical for the series of tests is a maximum performance at age C or D. As a rule the averages for C and D are quite close together and we recognize at once that these two groups make up the large body of our preferred employed personnel. We are not surprised that they actually demonstrate their superiority when subjected to psychological tests, but we must not make the mistake of supposing that there is really a broad heavy line clearly marking off group E from this "preferred personnel" as has been drawn for convenience in our table. We know, of course, that many of the individuals who fall in group E, ages 50 to 69, actually do perform at levels characteristic of group D, ages 30 to 49. To discover how many such able but older individuals actually exist is a present challenging problem in psychology.

The amount of over-lapping or scatter in the performance of the different groups naturally lends itself to statistical statements, but in this brief discussion I present it in the extremely simplified form of table 2. The notes at the bottom of the table indicate how the values in the four columns have been derived. What we really want to know is the per cent of younger men who are as poor or poorer than the average for the older group and also the per cent of the older individuals who succeed as well or better than the average for the younger, usually more able group. Let us consider these comparisons in turn. Each individual in group C was compared with the average for group E on each capacity measure and the per cent of C men who did better than the E average was determined. These percentages are entered in table 2, column C. They show for every measurement substantial percentages of individuals whose performance scores were just equal to or were poorer than the respective means for the older middle aged men, 50 to 69 years of age. A similar comparison was made for the individuals constituting the younger middle aged group D, 30 to 49 years. The per cent of these men who were

below the E average on this test is given in column D and omitting the hand promptness measurement which was so nearly equal for all groups, averages about 22 per cent.

The comparison in the other direction, that is, older men's performance in terms of younger men's averages was made in a slightly different way. Averages were derived in each measurement for the two middle aged groups at the top. If we average the other seven measurements the average is 26 per cent of group E demonstrating performance equal or better than the average for C-D. In column F are similar percentages for the 54 men 70 to 89 years of age, group F, who have also been compared against the combination averages for C-D. In two measures, visual acuity and immediate memory, no individual in group F

TABLE 2

Individual differences in performance ability within the different age groups

MEASURED CAPACITIES	AGE GROUPS				
	B (31) 10–17	C (49) 18–29	D (79) 30–49	E (111) 50–69	F (54) 70–89
Visual Acuteness		10.2*	19.0†	21.6‡	0.0§
Motility:					
Rotary Speed		24.5	25.3	23.6	3.7
Reach Precision		14.3	20.3	31.8	1.9
Hand Promptness		57.8	54.8	64.8	24.1
Foot Promptness		31.1	37.0	39.2	6.9
Immediate Memory		9.5	8.3	12.2	0.0
Judgment for Position		28.6	16.7	42.0	35.7
"Good Judgment"		6.1	26.6	19.0	11.8

* Per cent of C who just equal or are poorer than the mean of E.
† Per cent of D who just equal or are poorer than the mean of E.
‡ Per cent of E who equal or are better than the average mean for C and D combined.
§ Per cent of F who equal or are better than the average mean for C and D combined.

C and D combined. Then the individuals constituting group E were compared against this combined C-D average. Therefore, in column E of table 2 we have the percentage of the older middle aged men, ages 50 to 69 years, who perform as well or better than the average of all younger adult men 18 to 49 years of age. We note that these percentages range from 12 to 64, the highest being for hand promptness in which group E stood equalled the average C-D score, but in each of these measurements there were one or two individuals in F that almost reached the mean. The percentages in this column are quite uneven and one is tempted to dwell upon the differences and their implications. The combined average for the seven types of performance shows this group of old men to be to the extent of 9 per cent more successful than the average in the young, efficient years.

SUMMARY

The psychological abilities of adults have usually been studied abstractly and as a rule with little or no consideration for the factor of age. From practical experience we have the impression that human capacities change with age, and that different ones mature at different age periods. We are just at the beginning of actual survey experimentation in this broad field. Curves constructed from measurements made on different groups of individuals show that maximal performance ability in a wide range of functions usually occurs between the ages of 18 and 49 and as a rule in the earlier half of this period. The decline is not precipitous but progressive throughout later adult life. The differences between individuals at the older ages are often quite marked so that other factors are probably at least as weighty as chronological age itself in accounting for the general performance level of a given individual. Ten to twenty-five per cent of the men classified in later maturity and old-age groups are able to do as well in most tests as the average in the middle maturity or most efficient group. Demonstrated individual ability rather than recorded chronological age will, I believe, dominate the interest and point of view of the personnel directors of the future.

News Notes

TIMELY EDUCATION

An educational experiment of the first magnitude is now in progress in New York City. The Temporary Emergency Relief Administration of New York State and the State Education Department have organized and are maintaining a new kind of school system. Two hundred and fifty instructors, paid out of the unemployment relief fund, are conducting a wide variety of practical courses for unemployed adults. The instructors are experienced and of high calibre, having been carefully selected from thousands of unemployed. Courses are of the short unit type. Tuition is of course free. A squad of counselors is on hand to give information and to advise.

A better way of spending relief funds is hard to imagine. First, 250 instructors are given work. Many times that number are given a chance to keep brushed up on their occupations, or to train for new ones. The value of the project in maintaining morale cannot be doubted.

ANNUAL REPORT OF U. S. CIVIL SERVICE COMMISSION

According to the annual report of the U. S. Civil Service Commission for the fiscal year ending June 30, 1932, 21,449 persons were appointed, while 250,377 were examined. During the fiscal year 1931, 38,461 appointments were made.

Among the recommendations made by the Commission were the following:

1. To combine in one administrative body all Federal agencies which have to do with personnel in the Civil Service.
2. To consolidate departmental personnel offices and thus eliminate duplication in personnel records.
3. To change the retirement law to permit optional retirement after 30 years of service.
4. To eliminate marital status as a factor in Federal employment.
5. To set up in the office of the Civil Service Commission a modern and well-equipped unit to compile personnel statistics.

THE WOMEN'S BUREAU

According to the latest report of the Women's Bureau of the U. S. Department of Labor, the fiscal year ending June 30, 1932, was the busiest in the history of the Bureau. Studies completed during the year include: Women Office Workers in Philadelphia and St. Louis; Bookkeepers, Stenographers, and Office Clerks on Ohio, 1914 to 1929; Women in the Cigar and Cigarette Industries; and Made-Work Relief for White-Collar Unemployed. Among the studies still in progress are: Women in Business and the Professions; Employment of Women in Offices; Hours and Production; Household Employment in Chicago; and Occupational Progress of Women.

ASSOCIATION OF DEANS

The Annual meeting of the New York State Association of Deans was held in Bronxville on last November 4 and 5 at the Hotel Gramatan. The keynote of the program was "Education for a Changing Economic Order." Speakers included Dr. George Counts of Teachers College, Dr. Frederick Kelly, Director of the Division of Colleges and Professional Schools in the U. S. Bureau of Education, Dr. Kirby Page, Editor of the *World Tomorrow*, Dr. Juliana Haskell, Dean of Graduate Women of Columbia University, and Mrs. Anita Block, dramatic reader of the Theater Guild.

CONFERENCE ON COLLEGE ADMISSIONS AND GUIDANCE PROBLEMS

On last November 3rd distinguished educators gathered at the Hotel St. Regis

in New York to listen to a carefully prepared program on College Admissions and Guidance Problems. The meeting was held under the auspices of the Committees on Personnel Methods and on College Testing of the American Council on Education, the Commission on the Relation of School and College of the Progressive Education Association, and the Educational Records Bureau.

From the opening address on Admission to College, by Dr. Learned of the Carnegie Foundation, to the final paper, entitled "The Colleges Undermine Themselves: An Indictment of the Admission System," read by Dean Holmes of the Harvard Graduate School of Education, there was repeated emphasis on the importance of giving more attention in the future to intelligent and scientific study of the development, the traits, interests and abilities of each individual student and less to the traditional institutional requirements in terms of hours, units, and credits.

Each speaker emphasized the necessity for considering educational experience as a process of continuous growth, growth in terms of the individual's capacities and interests, and not as a series of efforts to clear artificial and arbitrary hurdles set along his path. Stress was laid upon the need for providing adequate means for accurately measuring and recording that growth, by the use of some sort of cumulative record form giving a complete and detailed picture of the essential elements in a student's life, activities, interests, and abilities throughout a number of years. Such a record should contain, among other data, a series of comparable test measures of intellectual capacity and academic achievement, supplementing the usual school grades and subjective judgments of instructors. Particular attention was called to the widespread use of the cumulative record forms prepared by the American Council on Education for both school and college.

Addresses delivered at this conference will be published by the American Council on Education in the *Educational Record*.

Personnel Books

EDITED BY O. MILTON HALL

THE PRINTING TRADES AND THEIR WORKERS

By Florence E. Clark. Scranton, Pa.: International Textbook Co., 1932, 132 pp., $1.40

Reviewed by ROY N. ANDERSON, *Teachers College, Columbia University*

This compact volume is the result of several years' work on the part of the Occupational Research Committee of the National Vocational Guidance Association. This committee has set up certain standards* for use in gathering and presenting information about occupations, and it has prepared this monograph as a sample which, it is hoped, will serve as a model which can be followed by individuals and organizations in preparing occupational monographs in the future.

While the authorship of the monograph is credited to Florence E. Clark, most of the information was originally gathered by four of the agencies which are members of the Occupational Research Section—the Public School Guidance Bureaus of Chicago, Cincinnati, New Orleans, and Detroit. This information, together with that from other sources, was assembled by Miss Clark, who made additional researches, and wrote the monograph according to the outline recommended for use by the Committee.

The book has a brief introductory chapter covering the growth and development of the industry, and showing how one trade has become many trades. Five chapters are devoted to a description of the various sub-occupations in this industry: The Compositor; The Pressman; The Bookbinder; The Stereotyper and the Electrotyper; The Photo-Engraver and the Lithographer. Each chapter deals with the historical development of the specialty, the number of persons engaged in it, a brief description of the workers doing this type of work, and the qualifications needed to fill this particular job.

There is a summary chapter which contains information about the entire industry: conditions of work, wages, and so forth. The two closing chapters deal with apprenticeships in printing—how young people may obtain training and how they may direct their schooling toward preparation for work in this occupation.

The book is written in such a style that it can be easily understood by the average high school student and is well pointed up at the end by a special message to the boys and girls who have read the book. It is well documented and illustrated with up-to-date photographs showing printers engaged at various tasks.

The book should be of special interest to vocational counsellors, because the industry of which it treats is one of the six largest in the United States, and the information is national in scope. It should also be valuable to young people who are contemplating entering the occupation of printer and who want reliable information regarding the conditions they will find there and the steps they should take in preparing for it.

Finally, it will serve as a guide-manual for investigators of occupations. By following it they can make their investigations and their monographs conform to the standards which are accepted as the best.

* Mary P. Corre. The Coördination Plan, *Vocational Guidance Magazine*, 1931, vol. IX, no. 8, p. 355.

THE INCIDENCE OF WORK SHORTAGE

By Margaret H. Hogg. New York: Russell Sage Foundation, 1932, 132 pp., $2.50

Reviewed by EMMETT H. WELCH, *University of Pennsylvania*

This book presents the findings of and the methods used in the experimental survey of unemployment conducted in New Haven, Connecticut, during May and June 1931, by Margaret H. Hogg and Ralph G. Hurlin of the Russell Sage Foundation. While presenting very illuminating and readable material in regard to the extent, incidence, and characteristics of unemployment in New Haven, this book accomplishes what is even more important, namely, it demonstrates and tests a method of measuring unemployment. The method of sampling used in the survey consisted of taking alternately five addresses and six addresses at inch distances through the card file of the New Haven Gas Company. Additional addresses were sampled, on the same basis, from the "dead service" file and from a file of residents in clubs, apartments, etc., whose addresses were not in the general file. The comparisons which Miss Hogg makes between the content of the survey sample and the content of the city, as shown by the 1930 Census, reveal that the sample obtained was reasonably representative of the city in regard to age, sex, nativity, and marital status characteristics. Likewise the proportion of gainful workers surveyed who were connected with each of eight industry groups was nearly the same as the respective proportions for all gainful workers in the city, as reported in the U. S. Census. From this reviewer's viewpoint, it appears unfortunate that more specific information in regard to occupational and industrial connection was not obtained. Other surveys have revealed that specific occupational and industrial connections have a closer relationship to employment status than any other single characteristic of the worker.

The form and content of schedules and the methods of interview, tabulation, and analysis are admirably presented by Miss Hogg, not only in their relationship to this particular study, but also in their wider relationship to the general problem of methodology in unemployment studies. The results and conclusions of the study are likewise presented with a viewpoint of determining dependable methodology, as well as of describing an unemployment situation.

The primary object of the study was, "to experiment with procedure in applying the only method which is sure to produce representative facts, namely, the method of random sampling, and to demonstrate its practicability." While the assertion that the random sampling procedure is, "the only method which is sure to produce representative facts," may be questioned, both as to the words "only" and "sure," nevertheless, Miss Hogg's study attains a very high level in respect to method and procedure in unemployment studies.

ENGINEERING: A CAREER—A CULTURE

New York: Engineering Foundation, 1932, 61 pp., $.15 (special quantity rates). Prepared by the Society for the Promotion of Engineering Education and Other Engineering Organizations

Reviewed by FRANK L. LOCKE, *Massachusetts Institute of Technology*

This pamphlet addressed, as its foreword says, to young men and to parents and teachers is a valuable contribution to the literature on occupations and vocational guidance.

Chapter one outlines briefly and tersely the outstanding requirements of the engineer and presents his opportunities, both in the profession and in other fields in which an engineering training is a distinct asset. Stress is laid on the importance to the engineer of a mastery of mathematics and

fundamental science. The need for broad, general training is pointed out. An understanding of and ability to get on with people are emphasized as essential. There is reference to engineering as "more than a mass of facts concerning structures, processes, and machines. Rather it is a habit of thought and method of achievement."

There is emphasis on the engineer's opportunity for contribution and influence in world affairs and in the "promotion of concord among all men." On the other hand, attention is drawn to the fact that "many men who operate engines and machines are called engineers, but their vocation is not engineering in the professional sense." The suggestion is offered that those not naturally fitted for the higher fields of technical engineering may find "satisfying careers" in less technical occupations.

Succeeding chapters give excellent descriptions of civil, mining, metallurgical, mechanical, electrical, and chemical engineering. The monograph contains a number of excellent pen-and-ink drawings depicting engineering operations and enterprises.

A chapter on preparation for engineering gives most valuable suggestions as to the personality and training required for success. Information and suggestions are given to aid in determining fitness for an engineering career and in selecting a school and college for training.

A final chapter gives information regarding the earnings of engineers with significant reference to the rewards for achievement other than the purely financial return.

A STUDY OF ERROR

By Carl C. Brigham. New York: College Entrance Examination Board, 1932, xiii + 384 pp., $5.00

Reviewed by JACK W. DUNLAP, *Fordham University*

The title would lead one to expect a statistical study of reliability and probably a treatment on validation and scaling of test items. Prof. Brigham, however, is interested not in distributing responses to an item into the point categories, right and wrong, but rather in *all* the solutions offered as answers.

The first chapter is devoted to a consideration of "meaning," presenting psychological and philosophical viewpoints by long quotations from Titchener, Dewey, and Ogden and Richards. An attempt is made to synthesize these viewpoints.

Certain material on symbolism is reviewed in chapter 2, and the author presents a plan for developing a new "Science of Education." By "Science of Education" is meant a systematic study into the multiplicity of responses made by people to a symbolic situation. He proposes to investigate the ambiguities and certain arbitrary but illogical forms in language by studying the distributions of responses; that is, language will be studied through the medium of man.

Chapters 3–9, present detailed item studies of verbal, number, and spatial material in many different forms. The work shows definitely that wrong responses are not random but have specific points at which they cluster. It is clearly demonstrated that in a certain situation the solutions are characteristic of the group and that similar groups, such as two successive college classes, will give almost identical frequency distributions of error. More important is the fact that the mean of the total scores of those choosing a particular response varies little from year to year. This consistency of responses, both as to number and to the quality of individuals, forms Brigham's base for the proposed "Science of Education."

There is no index. This serious omission is all the more unforgivable for occurring in such a thorough and fundamental work. Material in this book should be considered not only by the mental testers, but by psychologists, philosophers, and personnel workers.

THE PROFESSIONAL BOYS' WORKER

By Owen E. Pence. New York: Association Press, 1932, 108 pp., $1.50

Reviewed by E. A. Nicol, *Philadelphia Gas Works Company*

Mr. Pence's monograph is an intelligent and impartial description. His outline of the field of work, the type of personnel, and the future outlook is evidence that Y. M. C. A. Boys' Work Secretaries are taking their rightful place, not only in the Y. M. C. A., but among all social work organizations.

As a recruiting medium, *The Professional Boys' Worker* can be invaluable. It presents a very clear picture of the advantages and disadvantages of the secretaryship as an occupation and provides college students with data, hitherto unobtainable, by which to compare Y. M. C. A. work with other occupations. Boys' Work Secretaries have at last an unmistakable standard with which to measure their own accomplishments and set their goal.

The most gratifying contribution is an uncompromising statement regarding the shift from organizing and promotive skill to the skill in religious education method and procedure. The description of the progress of Association history is so logical and practical that it eliminates from discussion all questions of religious philosophy that have so often been the stumbling blocks in the development of religious work. This is illustrated in the quotation from "three widely recognized Association Boys' Workers."

"Period 1—From 1852 to 1910. Individual leaders initiated objectives on behalf of individual boys and large groups.

Period 2—From 1910 to 1925. Nationally classified and standard organization of activities with local and state simplification and adaptation. Attention centered on guiding leaders with small groups.

Period 3—From 1925 to the present. Methods of character development were studied and tested. Boys' initiative released by leaders' methods."

There are still local Y. M. C. A.'s whose programs represent the first period of boys' work history. The majority are still defending the program of the second period as the last word in boys' technique. The program implied in the field of work for the third period calls for much more intelligent leadership and a far richer background than the first period with the emphasis mainly on decision meetings and number reports.

The old days of selecting football heroes and emotional Sunday School teachers for boys' work positions seems to be over. Educational background plays a major part. Approximately 50 per cent of the present staff are college graduates and 22 per cent more have had college experience. While there is room for improvement, boys' work secretaries compare favorably with their brother secretaries in leadership capacity, interests, emotional stability and salary. There is evidence of less turnover and considerably more training for the profession. The Association drifted through the first and second historical periods with many conflicts of opinion regarding program. In the future, secretaries may be selected promiscuously and standards of some local Associations may be far too low, but at least they must know whether or not they are in line with professional standards.

CHILD LABOR

White House Conference on Child Labor. New York: Century, 1932, xix + 592 pp., $5.00

Reviewed by GEORGE A. HUTCHINSON, *Hartford House Y. M. C. A., New York*

The White House Conference on Child Health and Protection called by President Hoover prepared a series of reports on the various phases of child welfare. That on Child Labor, prepared by a sub-committee of the Committee on Vocational Guidance and Child Labor, is a good example of the thorough way the Conference did its work.

Experts, summoned from all over the country and provided with practically everything that has been written on the subject, whether previously published or not, have organized and summarized this enormous quantity of material and packed it into one volume.

The most important laws dealing with the employment of minors for each State in the Union are given in brief. The investigations on the extent of the enforcement of these laws are summarized and in some cases reveal the startling fact that a law, instead of correcting an evil, may be so applied as to intensify it. In general, however, there is evidence of considerable progress in the protection of children who must work for a living.

The report is divided into five main sections in each of which one aspect of the problem is analyzed. The subjects covered are:

1. Employment in Non-agricultural Occupations
2. Employment in Agriculture
3. Hazardous Occupations, Industrial Accidents, and Workmen's Compensation
4. Administration of Laws Affecting the Employment of Minors

A bibliography of 368 publications, together with the 536 pages of text, tables and charts make the book especially valuable as a handbook of ready information on every aspect of the subject of child labor in the United States.

INDUSTRIAL MANAGEMENT IN THIS MACHINE AGE. By Francis A. Westbrook. New York: Crowell, 1932. xvi + 399 pp., $3.50.

In this volume a consulting engineer has undertaken to make a rapid survey of the field of industrial management, particularly as it has been affected by recent technological improvements. Beginning with a discussion of the principles and scope of scientific management, the author traces the growth of industrial research, planning and control, and present-day organization for production and distribution. Later chapters treat of such specialized subjects as cost accounting, budgetary control, materials handling and personnel management. Much of the text is taken up with specific illustrations from the experience of companies.

The breadth of the field which he has selected to cover in a single volume has of necessity forced the author to make rigid selection of material and to treat many topics briefly and sometimes casually. In spite of this handicap, Mr. Westbrook has turned out a book which contains a valuable store of information.

LABOR PROBLEMS AND LABOR LEGISLATION (Revised). By John B. Andrews. New York: American Association for Labor Legislation, 1932, 135 pp.

This is a concise, simple and fair-minded introduction to labor problems, with special reference to corrective and protective legislation. Among the "problems" covered are employment, wages, hours, safety, health and social insurance. Numerous illustrations add to the vividness of presentation.

WORLD ECONOMIC SURVEY. Prepared by League of Nations, Geneva. Boston: World Peace Foundation, 1932, 327 pp., $2.50.

The title of this work well indicates its

chief merit and its character—a concise and careful summary, analysis, and comparison of data collected by the Economic Intelligence Service of the League.

A description of the elements of instability and significant new trends in the economic set-up of the post-war decade is followed by an admirable chapter on the development of the crisis. Then follow chapters recounting the main economic convulsions of the last few years: disorganized production and international trade, collapse of prices, paralysis of credit institutions, overburdening of public funds, the spreading plague of unemployment.

Vast quantities of statistical data have been concentrated into a relatively few tabulations; pre- and post-war comparisons of trade, production, etc., are made, by index numbers and by brief but illuminating comments. The bird's-eye-view character of the whole work is typified by a masterpiece of condensation, the chart (following p. 64) showing the development of the depression in 35 nations, by quarters from January 1928 to March 1932. A brief appendix gives selected statistical data with greater detail.

At appropriate places throughout the work, and particularly in the last two chapters, remedial and preventive measures are suggested, and others which have been tried are described. Constantly we are reminded that the main, if not the only road back to economic, political and social security for the peoples of the world, is by the way of enlightened international cooperation.

World Social Economic Planning. Material contributed to the World Social Economic Congress, edited by M. L. Fledderus. The Hague and New York: International Industrial Relations Institute, 1932, lxiii + 935 pp. (with *Addendum*), $2.50.

The International Congress whose proceedings are here reported devoted its seven days' sessions, (1) to the consideration of proposals which seek to substitute some measure of balance and planned co-operative endeavor for instability and maladjustment in the socio-economic world; also, (2) to efforts to deepen the consciousness of people everywhere that they are citizens of an interdependent world rather than of self-sufficing individual nations. Throughout the entire conference runs the conviction that recurring world catastrophe will be forestalled only as social-economic planning advances; and that not production alone, but living standards and general well being are at stake.

Representatives of some 25 nations participated, along with about a score of international delegates and representatives from various organizations, institutions, etc.

The scope of the conference is indicated by the seven major parts into which the program was divided:

I. The Present Paradox—Unemployment in the Midst of Economic Progress.
II. Principles and Practicability of Economic Planning.
III. Experience in National Economic Planning.
IV. Necessity and Means for International Economic Planning.
V. Standards of Living—The Resultant of Productive Capacity and Buying Power.
VI. Round Table Conference on the Workshop.
VII. The Necessity for World Social Economic Planning.

Some excellent charts showing recent economic changes and trends add to the value of the work. Miss Mary Van Kleeck, chairman of the program committee, contributes an excellent "Analysis and Review of the Congress" (pp. 5–69). Most papers and discussions are published in French and German as well as in English. The *Addendum*, bound separately, contains some of these papers and lists the personnel of the conference.

Contemporary Economic Problems. By Paul F. Gemmill and Associates. New York: Harper, 1932, xv + 673 pp., $3.00.

Contemporary Economic Problems differs from the conventional textbooks on economics. Problems have been selected for study which are of particular importance to present-day life. Pedantic discussion

of history has been dispensed with. Emphasis is reserved for interpretation and analysis of difficulties and of evaluation of proposed solutions. The authors do not hesitate to come to definite conclusions.

A sampling of some of the problems dealt with follows: business cycles; economic necessity; commercial and investment banking; taxing; monopoly; agriculture; tariff; international indebtedness; waste in production; and economic inequality. Definite recommendations are made in all cases.

ECONOMY AND TECHNIQUE OF LEARNING. By William F. Book. New York: Heath, 1932, 534 pp., $2.00.

The many facts concerning the learning process which have come out of psychological laboratories during the past thirty-five years are interpreted, inter-related, and arranged in a unified picture. "This text in the psychology of learning attempts to explain the general nature of this learning process; to show when and why learning occurs, how it takes place, and how it may be directed so that all desirable acquisitions may be made with the least expenditure of time and energy on the part of the learners."

The book is intended primarily as a text for teacher-training courses. But it may well serve a far wider group than that—the great number of people anxious to improve the efficiency of their learning. It should be said, however, that knowledge of psychological fundamentals is necessary for proper understanding and appreciation of the book.

THE FUNDAMENTALS OF LEARNING. By Edward L. Thorndike. New York: Teachers College, Columbia University, 1932, xvii + 638 pp., $6.50.

This book reports investigations of the learning process carried on over a three-year period by the staff of the Division of Psychology of the Institute of Educational Research of Teachers College, Columbia University, under the direction of Dr. Thorndike.

The purpose of the investigations, which were made on human subjects, was to find evidence affecting Thorndike's well-known theories of learning. In general it may be said that the evidence is highly favorable to the reaction-hypothesis. The law of exercise must be modified, for it is seen that mere repetition, without "belongingness," will not make learning connections. Of prime importance is the law of effect, especially on its positive side. While punishment is found to have little effect on the learning process, reward is a powerful force in learning. This particular finding is of great practical importance.

STUDIES IN THE PSYCHOLOGY OF MUSIC, VOL. I. THE VIBRATO. Univ. of Iowa Studies. Carl E. Seashore, ed. Iowa City, Iowa: Univ. of Iowa, 1932, 382 pp.

This volume is a digest of the experimental studies made at the University of Iowa on the vibrato. A considerable amount of material appears for the first time, but earlier publications are reviewed and incorporated in a unified and comprehensive statement. The volume represents over a decade of a coordinated research project, the possibilities of which have steadily expanded as the recent developments of phonophotography and sound technology have appeared. Studies of pitch, intensity and timbre vibrato in vocal and instrumental music are presented, and photophonographic apparatus is described. A non-technical summary of the established facts on the vibrato closes the volume. 144 references.

COLLEGE TEACHING. By Theodore H. Eaton. New York: Wiley, 1932, 264 pp., $2.50.

This is not meant to be a handbook of teachers' devices, but is instead devoted to the meaning of college teaching. Nevertheless college instructors will find much that will aid them to improvement of methods. The book consists of thirty sections, each of which starts with a proposition such as, "For learning the first condition is activity on the part of him who learns." Examples and discussion follow. This scholarly work should prove stimulating to many college instructors.

A TEXTBOOK OF OFFICE MANAGEMENT. By William H. Leffingwell. New York: McGraw Hill, 1932, x + 409 pp., $3.00.

The author has reduced his many years of experience as an office management expert to the form of a textbook on the subject. A mass of methods and technique are described, all of them resting on the principles of scientific management applied to clerical work. "In a word, then, the aim of this new conception of office management is simplification."

Parts 1 and 2 are devoted to theory and principles underlying office management and analysis of the problem. The remainder of the book, except a final section on Methods of Control, deals with *standardization* of the product, of the plant, of equipment and materials, of methods, and of personnel.

Quiz questions and problems at the end of each chapter help to make this a most effective text on modern office management.

FIND YOURSELF. By I. David Cohen. New York: Sears, 1932, 299 pp., $2.00.

This is a practical manual of vocational guidance, addressed not to the counselor but to the person seeking vocational adjustment. Writing in an entertaining style, the author describes important trades, businesses, and professions, and tells of the qualifications and talents needed for success in each. Aid is given the reader in analyzing and rating his abilities, interests, and limitations. A chapter is devoted to training.

The book does not stop with aiding people to make a vocational choice; suggestions are made on how to get and keep a job, and a number of "Secrets of Success" are listed.

JOBS FOR THE COLLEGE GRADUATE IN SCIENCE. By Edward John von Komorowski Menge. New York: Bruce, 1932, 175 pp., $2.00.

Dr. Menge's name is familiar to all students of the Biological Sciences. His texts in biology, embryology, and comparative anatomy are widely used. He has now prepared a book which will be welcomed by youngsters ambitious to be scientists, their parents, and all others charged with guiding them in occupational choices. The author, at the beginning, points out some of the common but costly errors of well-meaning but not too well informed advisers, and does much to clarify one's thinking as to what a scientist is as distinguished from the multitude of people who are working in the practical application of some branch of science.

The book was prepared in consultation with permanent secretaries of societies representing the various sciences and hence represents as accurate as possible a picture of what the young college graduate in science may expect to face. It is not simply the author's opinion of the situation—he is too good a scientist for that. It is the well-reasoned conclusions of experts in each of the four fields discussed. They include:

1. The Mathematicians, the Physical and Chemical Groups
2. The Medical Group
3. Engineering
4. The Biological Sciences

There are two appendices:

A. Positions where men and women trained in Botany are needed.

B. The most representative privately endowed research institutions in the United States.

New Books

ECONOMICS

ABOLITION OF UNEMPLOYMENT. By F. D. Graham. Princeton Univ. Press, 1932, 107 pp., $2.00.

BOOMS AND DEPRESSIONS. By Irving Fisher. New York: Adelphi, 1932, 279 pp., $2.50.

FACING THE FACTS: An Economic Diagnosis. By J. G. Smith. New York: Putnam, 1932, 388 pp., $3.00.

READINGS IN ECONOMIC PLANNING. By J. G. Fredrick. New York: Business Bourse, 1931, 359 pp., $3.50.

TRADE-UNION POLICIES IN THE MASSACHUSETTS SHOE INDUSTRY, 1919–1929. New York: Columbia Univ. Press, 1932, 377 pp., $5.00.

WAGE RATES AND WORKING TIME IN THE BITUMINOUS COAL INDUSTRY, 1912–1922. By Waldo E. Fisher and Anne Bezanson. Phil.: Univ. of Pa. Press, 1932, 396 pp., $3.50.

GUIDANCE

EDUCATION AS GUIDANCE. By John M. Brewer. New York: Macmillan, 1932, 677 pp., $2.75.

OCCUPATIONAL INFORMATION

MACHINE TOOL WORK: FUNDAMENTAL PRINCIPLES. By W. P. Turner, New York: McGraw-Hill, 1932, 424 pp., $3.00.

EDUCATION

CIVILIZING OURSELVES. By E. D. Martin. New York: Norton, 1932, 340 pp., $3.00.

PROPAGANDA AND EDUCATION. By W. W. Biddle. New York: Teachers College, 1932, 89 pp., $1.50.

PSYCHIATRY IN EDUCATION. By V. V. Anderson, M.D., and W. M. Kennedy. New York: Harper, 1932, 448 pp., $4.00.

SOCIOLOGY

FURTHER CONTRIBUTIONS TO THE PRESTIGE VALUE OF PUBLIC EMPLOYMENT. By L. V. White. Chicago: Univ. Chicago Press, 1932, 105 pp., $1.50.

INSURING THE ESSENTIALS: MINIMUM WAGE PLUS SOCIAL INSURANCE—a living wage program. By B. N. Armstrong. New York: Macmillan, 1932, 734 pp., $5.00.

PSYCHOLOGY

APPROACHES TO PERSONALITY. By Gardner Murphy and Friedrich Jensen. New York: Coward-McCann, 1932, 442 pp., $3.75.

HABITS: THEIR MAKING AND UNMAKING. By Knight Dunlap. New York: Liveright, 1932, 336 pp., $3.00.

MAN AS PSYCHOLOGY SEES HIM. By E. S. Robinson. New York: Macmillan, 1932, 383 pp., $2.50.

PSYCHOLOGY AND EDUCATION; new ed., rev. in collaboration with Frank S. Freeman. By R. M. Ogden. New York: Harcourt, 1932, 364 pp., $2.50.

REMEMBERING. By F. C. Bartlett. New York: Macmillan, 1932, 327 pp., $5.00.

THE STORY OF SCIENTIFIC PSYCHOLOGY. By Adelbert Ford. New York: Sears, 1932, 319 pp., $3.00.

Current Periodicals

PREPARED BY LINDA H. MORLEY, *Industrial Relations Counselors, Inc.*

ABSENTEEISM

MOSES, HERBERT W. Does sickness or do accidents cause the greater loss of time? *Stone and Webster Journal*, June, 1932, vol. 49, p. 409–414 (Abstract in *Social Science Abstracts*, Oct. 1932, vol. 4, p. 1621).

Eight days are lost from sickness per worker each year to one day lost on account of industrial accidents. Believes it is essential that health programs, especially those in smaller companies, be continued.

BUDGETS AND COST OF LIVING

STAEHLE, H. (Research Division, International Labour Office). International enquiry into living costs. *International Labour Review*. Sept. 1932, vol. 26, p. 313–363.

An explanation of the methods adopted by the I. L. O. in the investigation requested by Mr. Ford in order to discover what wages would be required in his European factories, in order to allow the same standard of living as enjoyed by workers in his Detroit plants.

The qualifications and reservations with which the final figures must be used and alternative methods of approach are discussed.

DISMISSAL WAGE

SCHWENNING, G. T. (University of North Carolina). Discharge indemnity for Japanese workers. *American Federationist*, Oct. 1932, vol. 39, p. 1127–1132.

Compensation, both voluntary and compulsory, is paid for all cases of discharge, including layoff because of the introduction of labor saving devices, improved management methods, business depressions, bankruptcy or unsuitability to work. These amounts are usually generous, exceeding legal requirements (Civil Code and Factory Acts). Examples of dismissal bonuses paid by 10 specific firms are given.

ECONOMIC CONDITIONS

DONHAM, WALLACE B. Attack on depressions. *Harvard Business Review*, Oct. 1932, vol. 11, p. 45–56.

Shows how the multitude of changes have upset the economic balance. Believes the "key to depressions lies with the consumers." Discusses briefly three large groups of domestic buyers: the farmer and the miner; the unemployed; and the middle class, all of whom now have decreased buying power. Believes spreading labor suggestion is thoroughly sound, and that of devising artificial ways of introducing new purchasing power when business sags is essential. Industry and government should coöperate.

Proceedings of the 14th Annual meeting of the American Association of Collegiate Schools of Business, Buffalo, N. Y., April, 1932. *Journal of Business of the University of Chicago*, Oct. 1932, vol. 5, p. 1–136, part 3.

Entire issue is devoted to the addresses made at these meetings. Of particular interest are those on placement, research, activities of bureaus of research and economic planning.

THORP, WILLARD L. Depression as depicted by business annals. *News Bulletin* (National Bureau of Economic Research) Sept. 19, 1932, No. 43, p. 1–4.

Data was compiled for 34 countries; of these 9 showed no decline in business conditions before end of 1929, and 4 not until middle of 1930. The "conspectus

of business conditions" is a tabular description of conditions in each of these countries from 1926–1931, under the phases of: business cycle, prosperity, recession, depression, and revival.

EMPLOYMENT EXCHANGES

DeSchweinitz, Dorothea (Assistant to the Director, State Employment Commission, Philadelphia). Organization of an experimental public employment office. *Personnel Service Bulletin*, Sept. 1932, vol. 8, p. 6–8.

Description of the work of the state employment office in Philadelphia, which was opened Feb. 15, 1932. The clerical, technical, home, and institutional divisions have 4 interviewers each, and the men's industrial division 6. Within each department, the interviewers are trained to specialize in one form of placement. The men's industrial division work is grouped into building, mechanical and manufacturing, and agriculture and miscellaneous. In each waiting room the clerk takes the name and sees that the applicant gets to the right interviewer, the interview being conducted in a private office. The morning hours are used for interviews, the afternoon for visits to employers. The interviewers are not burdened with filing cards, daily reports, etc., this work being done entirely by clerical workers. Bulletins are distributed to interested persons.

HOURS OF WORK

Average working hours per week in American industry, May, 1932. *Monthly Labor Review*, Sept. 1932, vol. 35, p. 602–615.

Statistics gathered from 25,525 manufacturing and non-manufacturing establishments employing 2,441,089 workers show 41.1 average hours worked per week. In the 9,200 manufacturing establishments, 49.7 per cent worked 36 hours or less per week. In all manufacturing industries there was an average of 37.3 hours provided.

MACHINERY IN INDUSTRY

Labor productivity and displacement in the leather industry. *Monthly Labor Review*, Sept. 1932, vol. 35, p. 473–488.

This study, which was confined to the manufacture of sole and side leather, calfskin and kid, and sheepskins, in 1923 and 1931, showed a gross loss of 16,277 employment opportunities, about ⅓ of which can be directly attributed to increase in hourly output. The causes of increase were found to be "improved management of labor, and the accompanying taking up of slack in the expenditure of the time of the labor force." This data was obtained through coöperation of more than 50 tanning companies.

Stratton, H. J. (Illinois College). Technological development of the American pottery industry. *Journal of Political Economy*, Oct. 1932, vol. 40, p. 661–676.

Between 1860 and 1914, the pottery industry seemed rather inefficient and slow to improve; the English potters being far ahead in using improved methods. Since 1914 production methods have moved forward. New machines have been installed and new mechanical methods have been adopted. Author believes next decade will see fewer and larger plants, with improvements in direction of higher quality and lower cost.

Technological changes and employment in the United States Postal Service. *Monthly Labor Review*, Oct. 1932, vol. 35, p. 745–762.

"Decrease in number of employment opportunities, which is in reality the extent of technological displacement, compared with 1908 amounted to 17.1% in 1912, and 40.2% in 1926. The peak was reached in 1930 with 41.8% reduction in employment opportunities but there was a decline to 38.8% in 1931."

SELECTION OF EMPLOYEES

Raphael, W. Spielman, and G. H. Roberts. Selection of telephone operators; an investigation undertaken for the Gen-

eral Post Office. *Human Factor*, Nov., 1932, vol. 6, p. 398–412.

A list of abilities required was discovered from first-hand training and experience at the London Telephone School, and tests developed as a result are described in some detail.

STANDARDIZATION

TACY, OSCAR L. Standards of work in small departments. *Proceedings of the National Office Maangement Association*, June, 1932, p. 29–33. (Abstract in Management Review, Nov. 1932, vol. 21, p. 333.)

A plan which provides for standardizing the office, by payment for production, and penalty for poor work, is in force among the 71 clerical employees of the Nashua Gummed and Coated Paper Company.

STOCK OWNERSHIP

CROW, WILLIAM H. Effect of depression upon employee securities. *Corporation Practice Review*, May, 1932, vol. 4, p.58–67. (Abstract in Social Science Abstracts, vol. 4, p. 1620, Oct. 1932.)

Because certain protective features for the employees have been in effect in the various stock ownership plans, the losses for the workers holding some $1,500,000-000 worth of securities prior to Oct. 1929, have been greatly minimized. Outstanding among such provisions are: withdrawal of installment payments with interest; bonus for continued holding of stock; special low prices to employees; and repurchase or loan by corporation.

UNEMPLOYMENT

LINDBERG, JOHN (Research Division, International Labour Office). Attempt to construct international measures of unemployment. *International Labour Review*, Oct. 1932, vol. 26, p. 491–512.

"After a general discussion of modern employment statistics, national indexes are calculated for a number of important industrial countries. Such indexes, it is pointed out, though far from perfect, may nevertheless be considered as useful and fairly satisfactory indicators." Based on 1927 as 100, these index numbers for 1931 vary from a low of 85 in Denmark to 206 in United States, 229 in Great Britain, 398 in Germany, to a high of 578 in Czechoslovakia. "The possibility of constructing an international index is also discussed."

UNEMPLOYMENT INSURANCE

STEWART, BRYCE M. (Director of Research, Industrial Relations Counselors, Inc.). State unemployment insurance. *Personnel*, Nov. 1932, vol. 9, p. 51–60.

Reviews briefly governmental insurance abroad, and the few voluntary plans in America, covering less than 250,000 workers at end of 1931. Believes interest is indicated by the 37 state bills which were introduced in 18 legislatures in 1931. Gives brief summary of Wisconsin law, which goes into effect June 1, 1933. Suggests a few lines of development for unemployment insurance plans in the United States: a much greater emphasis on the unemployment of depressions; the requirement that employee contribute; and, more emphasis on the relief phase.

Unemployment insurance report. *Economist*, Nov. 12, 1932, vol. 115, p. 870–873.

Summary of the report of the Royal Commission on Unemployment Insurance, which reviews the development from 1911–1931. The report of this commission is an outstanding contribution to the subject.

UNEMPLOYMENT RELIEF

BARRET, WILLIAM J. (President's Organization on Unemployment Relief). Extent and methods of spreading work. *Monthly Labor Review*, Sept. 1932, vol. 35, p. 489–492.

Questionnaire returns from 6,551 companies whose rated capitalization in 1929 was $100,000 or over, showed that the number of employed dropped 26.7% and the payroll decreased 42%, from 1929 to March 1932. Replies showed 56.1% on part time, and 25.5% on full time. Shorter week was used by 58.8% for spreading work. Over 10% expected to add to forces within next few months.

CARLTON, FRANK T. (Case School of Applied Science, Cleveland, Ohio). Employment and leisure. *American Federationist*, Nov. 1932, vol. 39, p. 1256–1260.

Problem is to give mass of men and women workers enough leisure and sufficient purchasing power to buy what the plants, properly and efficiently operated, can produce. Suggests formula of gradually drawing workers from basic industries, as coal mining, agriculture, etc., into new industries, or in industries where the demand for the product is more or less elastic, such as production of good housing facilities, improvement of transportation and communication, etc.

DANISH, MAX D. (Editor of *Justice*, Official Organ, International Ladies' Garment Workers' Union). Taxing machines to relieve the jobless. *American Federationist*, Oct. 1932, vol. 39, p. 1104–1106.

For a number of years pressers employed on power driven machines received $15 above weekly scale of hand pressers. On August 16, the Alger ruling reduced over-compensation to $12 and the difference of $3, together with additional $5 per week per machine is to be paid into presser's unemployment fund, which is to be administered by union.

VOCATIONAL GUIDANCE

MACRAE, ANGUS. Vocational guidance and the health of the industrial worker. *Human Factor*, Oct. 1932, vol. 6, p. 369–381.

Author shows how the health of the worker may be affected by maladjustment. Believes that the medical examination should detect physical capacities as well as defects. Suggests how teachers and vocational guidance directors can cooperate with the physician in the work of occupational guidance.

STOCKER, DR. A. (International Labour Office). Vocational guidance and selection. *Occupation and Health*, Brochure no. 314, 1932, 10p.

A careful examination of the physical and mental constitution of each prospective worker, as well as an analysis of the vocation, is suggested in selection procedure. In some countries some measures have been taken to ensure a systematic method in the practice of selection. The author also describes the medical cooperation in the national offices for vocational guidance in the United States and 10 European countries, where the doctor participates in the work of occupational guidance, frequently working in association with employment exchanges. Appendix gives sample medical sheet for vocational guidance, and type of a medical selection sheet.
"Bibliography," p. 10.

WAGES

Movement of wages in different industries and occupations: I, II, III. *International Labour Review*, Aug., Sept., Oct., 1932, vol. 26, p. 255–267; 431–437; 562–577.

Tables show either the relative situation in different industries in each of the 20 countries, in form of index numbers, or the actual level (in money) for each year from 1926 to 1930.

Similar statistics showing movement of women's wages will be given in subsequent article.

WELCH, EMMETT H. (Research Associate, Industrial Research Department, University of Pennsylvania). Purchasing power and wage policy; the relation thereto of recent changes in payrolls, hours and earnings in the United States. *Bulletin of the Taylor Society*, Oct. 1932, vol. 17, p. 169–184.

Does not believe reduction in wage rates, or the proposals for national planning which have as their purpose only control of production and capital expansion, would bring desired results. Thinks the chief problem is that of distributing adequate consumers' purchasing power to consume the goods produced.

Occupations, Intelligence, Age and Schooling

Their Relationship and Distribution in a Factory Population

By Millicent Pond, *Scovill Manufacturing Company*

It may not be surprising that Dr. Pond found in each of the occupational groups she studied—even among the unskilled laborers and truckers—men who had had as much schooling and men who tested as high in intelligence as some of the supervisors, foremen, laboratory workers and salesmen. The detailed figures repay close examination, as does the author's inference that a six months' period of employment in a factory occupation is not a satisfactory criterion of success.

The distribution of intelligence test scores, age, and schooling of a factory population of 9,075 men, divided into forty-four occupational groups, shows great overlapping in these measures from occupation to occupation. Nevertheless, the averages and interquartile ranges in both test scores and schooling correlate better than .74 with an occupational ranking based upon estimates of the degree of intelligence required. Test scores and schooling are practically normal in distribution; age is strongly skewed toward youth.

THE Scovill Manufacturing Company of Waterbury, Connecticut, ordinarily employs in its main plant about five thousand men and women in the fabrication of copper and nickel alloys, and the manufacture of articles from brass and other metals. These employees range in age from sixteen years to over seventy; in schooling, from none at all to advanced university standing. Some speak English very brokenly or not at all, and many cannot read English with any ease; this, however, is no serious handicap at work since many other employees are bilingual, including some of the foremen.

In the course of research on employment tests all newly hired employees of this company, and all who are to be transferred to new work, are given an intelligence test series. The test records are then classified according to the occupation entered, and studied in the light of any further information which can be secured, such as ratings, length of service in the occupation, reasons for termination or transfer, earnings, promotions, etc. Both correlation technique, and the simpler

devices of percentage comparison and critical scores are used. Such standards as are secured are incorporated in the company's selection and transfer procedure without any curtailment of careful interviewing, and in the past have immediately offered opportunity for effective clinical analysis and adjustment in problem cases, varying in amount with the degree of enlightenment of the department head, but bulking as large as selection in our estimate of the ultimate practical value of the project to the company. Quite aside from the question of test validation and application, however, a description of a factory population in terms of distributions of intelligence test scores, school levels, and age, in finely divided occupational groups, checked by close agreement between consecutive samples, has an interest which is both psychological and sociological.

The data reported here present such a description of the incoming male employees of five consecutive years, when business was relatively normal and the conditions of hiring known. This survey is more controlled and also more complete than a cross-section study of all employees on roll at a given date would be, since the total payroll includes many persons of long service of whom all circumstances surrounding their hiring and early training have been forgotten, while it excludes necessarily all persons who were once on the roll and have since terminated. The report is on the male employees hired or transferred into new work from December 1, 1923 to December 31, 1928. Omitted are all occupations which received less than forty new persons in five years, and those open only to boys. The sample numbers 9,075 persons, divided into forty-four occupational groups which range from 40 to 1,032 members.

The test battery given to all is composed of seven paper and pencil tests taken with slight modification from the United States Army series (four, non-verbal, from Beta; three, verbal, from Alpha), namely picture completion, number checking, digit-symbol substitution, geometrical construction, arithmetical reasoning, synonym-antonym, and analogies. Scores have been standardized to the same mean and sigma for each test, and the final score is the average of all tests in which the subject has scored at all. Reliability of the series in a random sample of 518 records, is .908, secured by correlating average scores in alternate tests, and correcting for doubling the length of the test. This adaptation of the Army tests for industrial use was planned by Prof. John E. Anderson of the University of Minnesota.

The accompanying tables represent the forty-four occupations of the five-year sample, table 1 for test scores, tables 2 and 3 for years of schooling and age, respectively. In each table the first column gives the number of individuals hired for the occupation; the second gives the average score, schooling (in years), or age; the third gives the interquartile range; and the fourth, the total range. The class interval for scores is five points; schooling, one year; age, two years. The chart, figure 1, presents the same material as table 1, except that the order of occupations is different.

The order of the occupational groups

TABLE 1

Test scores

OCCUPATIONS	N	MEAN	INTER-QUARTILE RANGE	TOTAL RANGE
Salesmen, purveyors, estimators	112	167.3	155–179	130–194
Laboratory workers, draftsmen, etc	93	167.3	155–179	105–204
Foremen, supervisors, clerks	349	159.2	150–169	105–209
Toolmakers	165	149.7	140–159	105–189
Machinists and helpers	91	147.7	135–159	95–184
Tool grinders	86	145.3	135–154	100–184
Toolsetters (not screw and rivet)	135	141.5	130–154	85–184
Electricians	57	149.9	140–164	100–189
Rivet die-makers, die polishers	44	147.3	135–159	110–189
Steamfitters	51	144.3	135–149	105–184
Toolsetters, screw and rivet	71	136.7	125–144	85–174
Carpenters	61	130.5	120–139	95–174
Tinsmiths, ironworkers, blacksmiths	90	129.8	115–139	80–164
Painters	52	134.1	120–144	95–174
Crane operators, truck drivers	152	138.2	125–149	100–184
Heat treat operators	100	132.5	120–144	90–189
Inspectors, mill and manufacturing	202	141.9	130–154	90–209
Packers, shippers	61	142.9	135–154	105–184
Miscellaneous machine operators, screw and rivet	87	139.7	125–154	95–179
Inspectors, rod, wire, flat metal, tube	147	125.6	110–144	80–184
Hand screw machine operators	151	128.7	115–144	80–179
Crane trailers, tractor operators	146	134.2	120–144	80–174
Hand edgers, knurlers, automatic machine operators	217	130.7	115–144	85–179
Buffers	291	122.1	110–134	65–174
Coremakers, grinders, helpers, foundry	142	132.5	120–144	80–174
Light bench workers, repair, etc	321	139.5	130–149	85–194
Headers, reheaders	229	138.1	125–149	95–209
Straightener operators, helpers, saw operators	310	132.0	120–144	80–184
Fine and coarse wire workers	299	121.5	110–134	60–174
Draw bench operators, helpers	89	122.8	110–134	85–179
Dippers, platers, lacquerers, etc	276	121.1	105–134	75–189
Stickers, blockers, coilers	102	118.9	105–129	60–179
Slitters, trimmers, dry-out, etc	1032	123.7	110–139	60–189
Heavy presses, manufacturing	145	123.2	105–139	85–174
Floormen, buff, butt, burner, etc	300	138.2	125–154	80–189
Muffle helpers, firemen, moldmen, casting	328	117.0	105–129	80–184
Bull block operators, pointers, rolls helpers	651	113.8	100–124	60–169
Extrusion press helpers, utilitymen, mill	362	113.0	100–124	60–174
Oilers, beltmen, rolling barrel operators, etc	260	127.2	115–139	80–189
Floormen, screw and rivet	101	123.1	110–134	80–184
Utilitymen, casting, moldmen, floormen, foundry	469	115.3	100–129	60–169
Hand truckers, teamsters	237	125.2	110–134	80–184
Utilitymen, stores and sanitary department	119	121.0	105–134	85–169
Laborers, yard and construction	292	114.5	100–124	60–164
Total (average weighted by N)	9075	128.9	110–144	60–209

TABLE 2

Schooling

OCCUPATIONS	N	MEAN	INTER-QUARTILE RANGE	TOTAL RANGE
Salesmen, purveyors, estimators	112	13	10–14	7–17
Laboratory workers, draftsmen, etc.	93	13	10–14	3–17
Foremen, supervisors, clerks	349	11	9–12	1–20
Toolmakers	165	10	8–10	3–16
Machinists and helpers	91	9	8–9	3–14
Tool grinders	86	9	8–9	4–16
Toolsetters (not screw and rivet)	135	8	7–8	0–14
Electricians	57	9	8–10	1–16
Rivet die-makers, die polishers	44	10	8–10	6–14
Steamfitters	51	9	8–9	3–12
Toolsetters, screw and rivet	71	8	6–8	0–15
Carpenters	61	7	5–8	0–11
Tinsmiths, ironworkers, blacksmiths	90	8	6–8	0–15
Painters	52	8	7–8	0–11
Crane operators, truck drivers	152	8	7–8	0–15
Heat treat operators	100	8	6–8	0–17
Inspectors, mill and manufacturing	202	9	7–9	0–16
Packers, shippers	61	9	8	3–12
Miscellaneous machine operators, screw and rivet	87	8	7–9	2–12
Inspectors, rod, wire, flat metal, tube	147	6	4–7	0–16
Hand screw machine operators	151	7	5–8	0–14
Crane trailers, tractor operators	146	8	6–8	0–15
Hand edgers, knurlers, automatic machine operators	217	7	6–8	0–16
Buffers	291	6	3–7	0–14
Coremakers, grinders, helpers, foundry	142	7	5–8	0–13
Light bench workers, repair, etc.	321	9	7–9	0–16
Headers, reheaders	229	8	6–9	0–16
Straightener operators, helpers, saw operators	310	7	5–8	0–16
Fine and coarse wire workers	299	6	3–8	0–14
Draw bench operators, helpers	89	6	4–7	0–14
Dippers, platers, lacquerers, etc.	276	6	4–8	0–15
Stickers, blockers, coilers	102	5	2–7	0–13
Slitters, trimmers, dry-out, etc.	1032	7	4–8	0–17
Heavy presses, manufacturing	145	6	3–7	0–15
Floormen, buff, butt, burner, etc.	300	8	7–9	0–15
Muffle helpers, firemen, moldmen, casting	328	5	3–7	0–16
Bull block operators, pointers, rolls helpers	651	5	3–6	0–15
Extrusion press helpers, utilitymen, mill	362	5	3–6	0–15
Oilers, beltmen, rolling barrel operators, etc.	260	7	5–8	0–16
Floormen, screw and rivet	101	7	4–8	0–16
Utilitymen, casting, moldmen, floormen, foundry	469	5	3–7	0–12
Hand truckers, teamsters	237	7	4–8	0–13
Utilitymen, stores and sanitary department	119	6	3–7	0–12
Laborers, yard and construction	292	6	3–7	0–14
Total (average weighted by N)	9075	7	4–8	0–20

TABLE 3

Age

OCCUPATIONS	N	MEAN	INTER-QUARTILE RANGE	TOTAL RANGE
Salesmen, purveyors, estimators	112	29	24–33	16–57
Laboratory workers, draftsmen, etc.	93	28	20–31	16–65
Foremen, supervisors, clerks	349	28	22–33	16–59
Toolmakers	165	32	26–37	18–57
Machinists and helpers	91	31	26–35	16–55
Tool grinders	86	30	24–35	16–49
Toolsetters (not screw and rivet)	135	31	24–35	16–53
Electricians	57	28	22–33	16–51
Rivet die-makers, die polishers	44	30	22–33	16–53
Steamfitters	51	30	24–35	16–53
Toolsetters, screw and rivet	71	30	24–33	16–55
Carpenters	61	31	24–37	16–53
Tinsmiths, ironworkers, blacksmiths	90	30	22–35	16–51
Painters	52	32	24–37	16–57
Crane operators, truck drivers	152	27	22–29	18–55
Heat treat operators	100	24	20–25	16–43
Inspectors, mill and manufacturing	202	27	22–31	16–59
Packers, shippers	61	27	22–31	16–51
Miscellaneous machine operators, screw and rivet	87	24	20–25	16–47
Inspectors, rod, wire, flat metal, tube	147	29	22–33	16–57
Hand screw machine operators	151	31	24–35	16–57
Crane trailers, tractor operators	146	27	22–31	16–49
Hand edgers, knurlers, automatic machine operators	217	28	22–33	16–51
Buffers	291	34	26–39	16–61
Coremakers, grinders, helpers, foundry	142	26	20–29	16–51
Light bench workers, repair, etc.	321	26	20–27	16–63
Headers, reheaders	229	25	20–25	16–47
Straightener operators, helpers, saw operators	310	28	22–33	16–57
Fine and coarse wire workers	299	31	24–35	16–57
Draw bench operators, helpers	89	29	24–33	18–49
Dippers, platers, lacquerers, etc.	276	31	24–37	16–63
Stickers, blockers, coilers	102	32	26–35	20–49
Slitters, trimmers, dry-out, etc.	1032	29	24–33	16–63
Heavy presses, manufacturing	145	30	24–35	16–57
Floormen, buff, butt, burner, etc.	300	25	20–27	16–59
Muffle helpers, firemen, moldmen, casting	328	31	26–35	16–57
Bull block operators, pointers, rolls helpers	651	30	24–35	18–51
Extrusion press helpers, utilitymen, mill	362	29	24–33	18–51
Oilers, beltmen, rolling barrel operators, etc	260	30	20–35	16–63
Floormen, screw and rivet	101	31	24–35	16–57
Utilitymen, casting, moldmen, floormen, foundry	469	30	24–35	16–53
Hand truckers, teamsters	237	28	22–35	16–55
Utilitymen, stores and sanitary department	119	30	22–37	16–63
Laborers, yard and construction	292	30	24–35	18–53
Total (average weighted by N)	9075	29	22–35	16–65

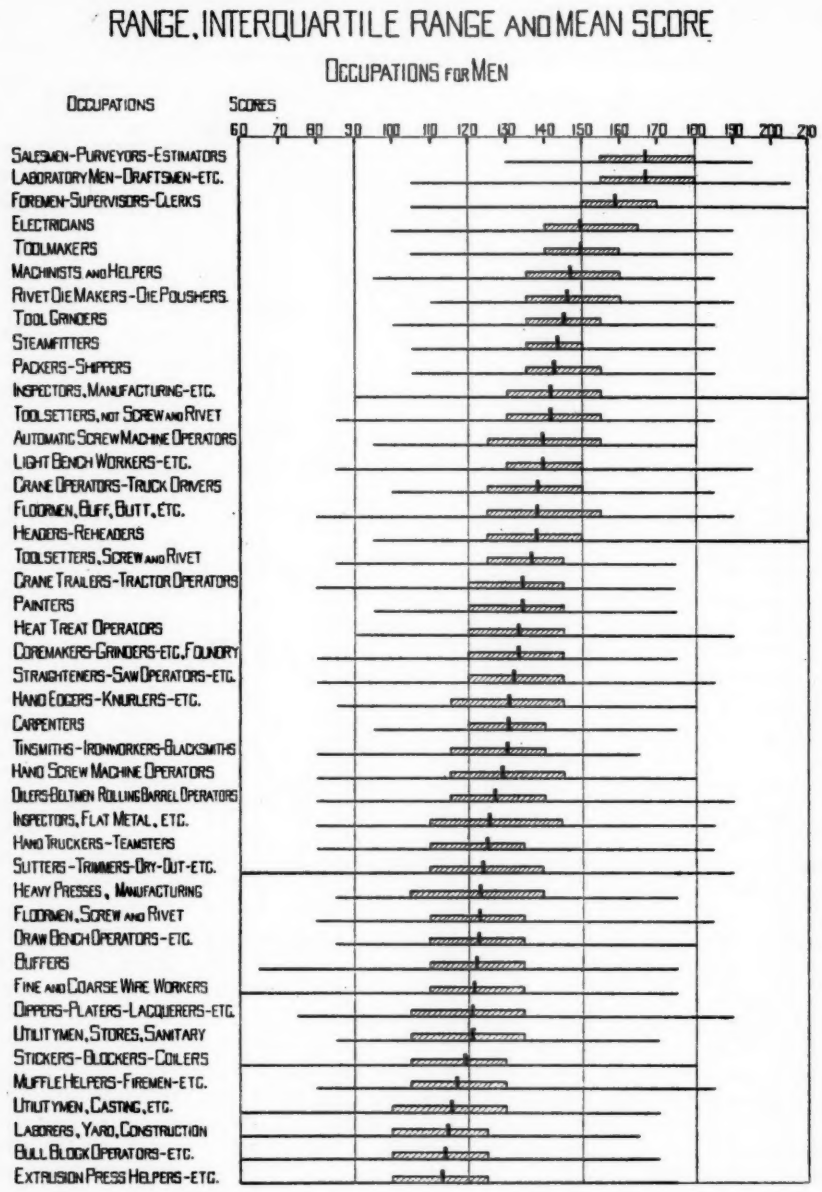

FIG. 1. MEN'S OCCUPATIONS ARRANGED IN ORDER OF AVERAGE TEST SCORES

in the three tables is the order of the average ranking given by eight men, who ranked the occupations according to the estimated degree of intelligence required to do the work involved. Six of the judges had been with the company many years, all had been in positions which gave them wide knowledge

of factory occupations. They knew nothing of the scores. Reliability of their judgments is very high, for although correlations of the rankings of one judge with the rankings of all range from .772 to .928, the average rankings of four of the judges with the average of the other four, corrected for doubling the number, gives R = .984. In the chart the occupations are given in the order of the mean test scores.

From table 1 it is evident that in intelligence test scores men are hired over a very wide range for every occupation, and that the overlap from one occupation to another is great. It is amazing to note how many higher scored individuals have been selected for and have accepted the lower grades of work, and vice versa. In spite of this wide general distribution, however, there is a recession of means, correlated with job rank, noticeable in the table, and giving a coefficient of .768. That is, the average test score for an occupational group correlates moderately well with its place in the series of average rankings. Of extreme interest are the exceptions. Seven of the twelve occupations judged higher in mental requirement than average score would indicate involve an acquisition of proficiency in repetitive manipulation bordering on skill, though they are not classifiable as skilled occupations, and three are trade groups, the trade names probably carrying a higher connotation of ability in general than the particular individuals hired for the factory openings in the trade need possess. On the other hand, six of the nine occupations judged lower than average score would indicate involve elements of judgment, such as sorting, trouble-finding, self supervision, and the like, not always appreciated in job analysis. Possibly, then, proficiency in manipulation exerts a halo effect upon the judges' ratings, obscuring certain factors of intelligence.

In years of schooling the situation is duplicated, though the smaller class intervals reduce differentiation between occupations. There is much overlap in years of schooling from one occupation to another, yet the mean and the interquartile range both decrease, in moderage agreement with the occupational rank. Correlation of rank with mean schooling is .741.

For age the conditions are different. Except for slight variations, all ages are hired in all occupations; the overlap is almost complete. There is no systematic tendency linking age and occupation; correlation of rank with average age is .002.

It is important, also, to comment upon the types of distribution curve present in these three characteristics, particularly since they are typical of all groups of new employees thus far studied. Test scores give a curve which is slightly flat, but essentially normal in type and free from irregularities. The curve for schooling is less regular, with some piling up of zero measures, as well as expected high points at 8, 12, and 16 years, but still of normal type. On the other hand the curve for age is so strongly skewed toward youth as to present nearly a J-curve. This skewness can be seen in the data of table 3, and would be even greater if the omitted boys' occupations were included. Table 4 gives the data on curve type.

So much for the quality of the distributions. What about their reliability? Would the hirings of 1930, 1931, and 1932 give the same picture? From á priori considerations one would expect differences to appear in those years, due to the extreme differences in industrial activity, but very few persons were hired, and the figures have not been compiled. Concerning the reliability of the given five-year sample, however, there is unexpectedly clear evidence. The figures were originally compiled in two samples, one for a period of three years, the other for two years. All characteristics noted on the tables for the total sample appear fully in each of the two subdivisions, and correlations between the occupational means in score and schooling in the two samples are amazingly high: for test scores $r = .945$, for schooling, .924, for age .639. Similarly for the agreement between total and interquartile ranges. The five-year sample is a reliable index of conditions in normal times, for score and schooling, at least.

We come, now, to another consideration. Of all the persons hired or transferred into new work in this plant in ordinary times approximately 60 per cent are gone in less than six months. Termination causes include illness, inability to do the work, lay-off on account of lack of work, and discharge, but the major designation in point of numbers is voluntary leaving. This terrific loss of time and effort, both for the employer and for the employee who leaves, is not unusually high in the metal industry, and it is not due to any recognized inadequacy in working conditions. The percentage varies from 18 to 80 per cent in the different occupations.

Now in spite of the fact that six months is a very short time for determining fitness for a job which requires training, it may be quite long enough for many of the occupations of this survey. On statistical grounds alone one would expect that so large a loss as 60 per cent might have an effect on distributions, and there is, moreover, the traditional hypothesis that the more intelligent or more thoroughly schooled persons quickly leave the lower level jobs, and the less intelligent quickly fail in the higher levels. One may well ask what actually occurs.

Surprisingly enough, practically no change at all occurs in the position of the interquartile range or of the mean, in test score, schooling, or age, due to the losses of the first six months. The largest change in mean test score is 5.2 points, the average, 1.7 points.

TABLE 4

Characteristics of the curves

	M	MEDIAN	SIGMA	Q	Sk	Ku
Test scores	128.9	127.7	22.6	16.6	−1.89	0.28
Schooling	7.0	7.5	3.5	2.2	+0.81	0.24
Age	29.1	27.2	8.3	6.0	−3.47	0.28

N = 9075. Symbols follow T. L. Kelley, Statistical Method, The Macmillan Company

Similarly for schooling and age. Correlation of the means in the total group, and in the group remaining on roll at the end of six months gives $r = .976$ for test scores, $r = .950$ for schooling, $r = .893$ for age. Correlation of the limits of the interquartile ranges gives six coefficients, two for each characteristic, whose average is .917. A slight contraction of total range does occur, chiefly at the upper end. Sixteen occupations show a total contraction in score as large as 20 points, or a little over one standard deviation. Correlations for the lower limit of the range in the three characteristics average .856, for the upper limit, .702. In view of the stability of means and interquartile ranges, this contraction is not very marked.

TABLE 5

Reliabilities

	R	$\frac{2R}{1+R}$	P.E.
Test series, alternate tests	.831	.908	.005
Rankings, alternate judges	.969	.984	.003
Sample, 3 years versus 2 years:			
Mean score	.945	.972	.006
Mean schooling	.924	.960	.008
Mean age	.639	.780	.040

TABLE 6

Correlations

	R	P.E.
Five year sample as hired:		
Average rankings with mean score	.768	.041
Average rankings with mean schooling	.741	.045
Average rankings with mean age	.002	.101
Mean score with mean schooling	.966	.007
Mean score with mean age	−.281	.093
Mean schooling with mean age	−.240	.095
Five year sample as hired, versus same as still on roll six months later:		
Mean score	.976	.005
Mean schooling	.950	.010
Mean age	.893	.021
	AVERAGE R	AVERAGE P.E
Limits of ranges, coefficients averaged for score, schooling and age:		
Lower limit total range	.856	.027
Upper limit total range	.702	.050
Lower limit interquartile range	.922	.015
Upper limit interquartile range	.912	.017

The indication is, then, that the loss of employees, during the first six months, all causes included, is not selective, in spite of the fact that only 40 per cent of the men originally hired remain. This fact effectively dismisses tenure of job for six months as a criterion of success against which to validate tests, but does not preclude the possibility that tenure of job for a longer period, or an analysis of termination causes, might furnish a criterion.

SUMMARY

This material has shown, for a relatively normal business period and a relatively large factory, that in the incoming group of male employees:

1. Test scores and schooling are practically normal in distribution; age is strongly skewed toward youth.*

2. There are wide ranges of intelligence test scores, schooling, and age.

3. These ranges overlap broadly by occupation.

4. The means and the interquartile ranges in both test scores and schooling are positively correlated with an occupational ranking based upon estimates of the degree of intelligence required.

5. Age shows no systematic relationship to occupation.

6. The material is reliable for the five years covered, and probably for any normal period as long as two years.

7. Six months after hiring, the distributions of men who remain on the payroll, although only 40 per cent of the original number, still show all of the characteristics of the original groups as noted. Even the specific range limits and means have undergone almost no change.

* Ed. note: This finding is not to be considered as evidence of discrimination against older applicants.

Paper read before American Psychological Association, September 9, 1932

Ascendance-Submission Test—Revised

By R. O. Beckman, *Psychological Corporation, New York*

A person's tendency to assume a dominating rôle in the various social situations is a trait the precise significance of which, in relation to probable successful adjustment in different lines of work, personnel managers as well as educators and vocational counselors are interested to ascertain.

The Allport test of ascendance-submission has been revised for business use by the adoption of business terminology, elimination of undiagnostic items, and revision of weighting after an item analysis. Methods used in improving the internal consistency of the test are described. Tentative norms are given, based on data from 350 adult men.

SINCE its publication in 1928, the A-S Reaction Study[1] has been used in vocational guidance and personnel work as a measure of the disposition of an individual to dominate his fellows (or to be dominated by them) in various relationships of everyday life. The test presents forty-one situations. The subject is required to indicate his customary behavior in each of these situations by checking one of a number of standardized responses. Positive scores indicate an ascendant type of personality; negative scores, a submissive personality. Research on the part of a number of investigators has disclosed that the form has definite value in determining executive aptitude and that, with modifications, it could be used to advantage in the selection of salesmen.

[1] G. W. and F. H. Allport. A Test for Ascendance-Submission, *Journal of Abnormal and Social Psychology*, 1928, vol. XXIII, no. 2.

In applying the A-S test to the practical requirements of an employment office, however, the writer and others engaged in personnel selection have met with certain obstacles. In the first place, this form was primarily intended for use with college students, or with men and women recently out of college. A number of the behavior situations were staged in an academic atmosphere; they failed to apply to persons who had never attended college or to mature adults whose personalities had undergone adjustments since they graduated. An illustration of this point is found in the question: "Have you ever felt that a professor talked too much in class and should give you more chance to express your views and conclude points?" In answering this question, the subject checks one of the words, "frequently," "occasionally," or "never," the respective scores for which are +2, 0, and −1. Another criticism of the test when applied to the selection of candi-

dates for employment is that, although its successful use depends upon sincere coöperation and an honest response on the part of the applicant, little attention was paid in framing the questions to the desirability of not making their purpose obvious. The order of the responses to be checked is uniform in arrangement from ascendant to submissive, or vice versa, and a clever subject might find it easy to "beat" the test.

Having become convinced that a test using this type of approach could be put in practical use in connection with the selection of executives, managers, field representatives, and salesmen, the writer in 1929 undertook experiments in the business field with a modified form of the original A-S test. A first experimental revision contented itself with eliminating the academic situations and in making minor changes in the phraseology of a few questions. Satisfactory results were obtained with some five hundred cases tested with the form as shortened, but little attention was paid to the question of internal consistency and relatively little to validity. Following the publication of an article on the internal consistency of the form for men by Dr. Charles K. A. Wang,[2] it became apparent that, although the test was valid within reason for the trait it purported to measure, not all the items of the test were diagnostic of that trait. Dr. Wang's study seemed to prove conclusively that thirty of the responses were definitely diagnostic while eleven were undiagnostic. He found a correlation of .97 between the total score and the scores of the thirty diagnostic questions which suggested that these thirty responses were practically equivalent to the whole test as a measure of the trait. Except for the fact that a larger number of situations affords a more representative sampling of the reactions of an individual, it became apparent that a shorter test would be satisfactory. Dr. Wang's study also showed that some of the undiagnostic questions could be used if the weighted score values assigned to different responses were altered and that the test as a whole could be improved if the weights were adjusted to provide a better measure of internal consistency.

A brief description is necessary of the procedure followed in determining whether to each question positive responses were made more frequently by ascendant than by submissive persons, negative responses more commonly made by submissive rather than ascendant subjects, and zero responses scattered through the entire range. The total scores were first arranged in order of rank from highest to lowest and divided into five groups of equal size. For each question the number of responses within each quintile group was then tallied and the frequencies determined.

Question 3, for example, reads: "At an entertainment, church, or lecture, if you arrive after the program has commenced and find that there are people standing, but also that there are front seats available which might be secured without discourtesy, but with considerable conspicuousness, do you take the seats?" In analyzing the diagnostic value of this question,

[2] *Journal of Abnormal and Social Psychology*, 1931, vol. XXVI, no. 2.

let us assume that we find the responses of one hundred subjects to be distributed as in table 1. It will be observed that the trends are very definite. The first or most ascendant quintile of the population tested shows ten positive responses as compared with but one positive response for the fifth or most submissive quintile. The zero responses are scattered throughout the group. The negative responses show an ascending trend from 0 to 9 which is as it should be. The question therefore has diagnostic value.

If the scoring values of the responses are correct, the algebraic sum of the products of the individual scores by their respective frequencies (the Σ's) should be a positive value for the ascendant group and a negative value for the submissive group, with the intermediate groups uncertain. What is more, the algebraic sum of the individual Σ's should approach zero, when the score values are assigned on the basis of frequency. In this particular case, however (using the weights suggested by Dr. Wang's analysis rather than those originally fixed by the Drs. Allport), it will be noted that the Σ total is 30, which cannot be said to approach zero, and the distribution of the algebraic sums is skewed. An algebraic sum of 0 should more properly appear under the 51-60 group than under the 61–80 group.

TABLE 1

Distribution of responses to a single item by quintiles of total scores

RESPONSE	SCORE	FREQUENCY					TOTAL
		1–20	21–40	41–60	61–80	81–100	
Habitually	+2	10	7	5	3	1	26
Occasionally	0	11	10	14	11	10	54
Never	−1	0	2	5	6	9	22
	Σ	20	12	5	0	−7	30

TABLE 2

Showing better distribution with changed weighting

RESPONSE	SCORE	FREQUENCY					TOTAL
		1–20	21–40	41–60	61–80	81–100	
Habitually	+1	10	7	5	3	1	26
Occasionally	0	11	10	12	11	10	54
Never	−1	0	2	5	6	9	22
	Σ	10	5	0	−3	−8	4

The score values can therefore be changed to advantage. By experimenting with the various possibilities, it is found that better results are obtained by using a positive score of +1 instead of +2, as is shown in table 2.

Similar analysis and reweighting of a number of other questions were found

necessary, before the final revised form was in shape for publication. For this study a tentatively revised form was prepared and filled out by 350 subjects.

Since Dr. Wang's investigation was conducted with students at the University of Chicago, rather than with adult applicants for employment, his findings were checked by analysis of two hundred forms which had been filled out by men either engaged or seeking employment in the field of variety store management. For this purpose a shorter revised form of the test was used. Internal analysis disclosed results similar to those obtained by Dr. Wang. The same questions were found to be undiagnostic although to a different degree. It was apparent that some of the questions would have little prognostic value even if modified, and that the score values of others should be changed.

Clearly, there was need for a still more thoroughgoing revision of the A-S Test for commercial employment purposes, one which would overcome as far as possible the objections cited at the beginning of this article, and which would also meet the requirements of internal consistency and diagnostic value suggested in the technique developed by Dr. Wang. So further modifications were made in the test. Academic situations were eliminated. For example, one of the questions in the original test specified that "a professor or lecturer asks any one in the audience to volunteer an idea to start discussion." The revised question specifies "a chairman or speaker" in a "meeting" of twenty or more people, several of whom are acquaintances of the person filling out the blank. A number of the situations were rephrased so as not to make obvious the response for which a credit for ascendancy would be given. With this thought in mind, the order of the responses was also varied. The number of questions was reduced from forty-one to twenty-seven. Undiagnostic items were eliminated. Only two or three of the questions were so changed as to constitute what are practically new situations.

Steps were then taken to standardize the revised form and to establish norms. The revised form was given to a large group of managers and applicants for student manager positions in a variety store chain, to a wholesale sales group, to various groups of executives and technicians, and to a group of 50 junior and senior students at Northwestern University. The forms were scored with the use of score values or weights determined from the combined experience shown by the analysis of the two hundred cases tested by Dr. Wang and of the two hundred business men whose responses had been previously analyzed by the writer.

The tentative norms (see table 3) established on 350 cases disclosed a decile distribution of scores very closely approximating that obtained with the original Allport form except that the range was shorter. The original form made possible a maximum ascendant score of +81, and a maximum submissive score of −79; whereas scores on the revised form may range from +49 to −51.

Scores of several occupational groups on the new form are shown in table 4. Variety store managers, each of whom has supervision over from six to forty

TABLE 3

Tentative norms of Ascendance-Submission Test revised for business use—350 cases

DECILE	DEGREE OF ASCENDANCE-SUBMISSION	RANGE OF SCORES
1	A 4	49* to 21
2	A 3	20 to 15
3	A 2	14 to 9
4	A 1	8 to 5
5	Average	4 to 2
6	Average	1 to −1
7	S 1	−2 to −5
8	S 2	−6 to −9
9	S 3	−10 to −15
10	S 4	−16 to −51*

* These scores are the maxima possible. The values thus far actually found with this Business Revision of the A-S Reaction Study range only from 44 to −35.

Median = 1; mean = 1.4.

clerks and assistants, make the highest median score. In this organization it was found that of all the store managers who left the company's service in the course of a year, only one-fourth showed positive scores as compared with the three-fourths who scored negatively. Men with submissive scores succeeded less often with this organization. Eighty per cent of the store managers at present employed with this firm are ascendant rather than submissive. In a few instances, it is found that managers with pronounced submissive scores succeed because they make a profit as a result of superior intelligence and great attention to detail which involves much overtime work.

Success on the job of 35 store managers who remained with the organization for more than one year was measured by a carefully planned service rating form. The correlation between A-S scores and this criterion was .27, a figure large enough to suggest a reasonable validity with a larger number of cases, and a more reliable criterion.

Data from a large electrical manufacturing company which coöperated in the experiment appear to suggest that the A-S form is not as important in selecting supervisors in manufactur-

TABLE 4

Distribution of scores by occupations

GROUP	NUMBER OF CASES	RANGE OF SCORES		MEDIAN	MEAN
College Juniors and Seniors	50	+29	−35	−1.0	−1.0
Applicants for Student Manager (Chain) Positions	40	+33	−21	.5	1.1
Managers of Variety Stores (Chain)	110	+44	−26	8.0	7.7
Production Tracers (Electrical Manufacturing)	30	+25	−16	1.0	1.8
Field Salesmen (Wholesale)	40	+24	−14	6.5	5.7
Junior Executives and Technicians (Public Utility)	55	+29	−23	1.0	3.3
Junior Executives (Public Utility)	20	+23	−8	4.5	6.0
Non-Executives (Public Utility)	16	+14	−23	−4.0	−8.5
Shop Foremen (Electrical Manufacturing)	26	+32	−23	−.5	0
Insurance Salesmen (Training Class)	110	+32	−31	2.8	4.0

ing establishments as it is in choosing supervisors and salesmen for commercial or office concerns. A group of 26 shop foremen, many of whom had supervision over more than 100 operatives, showed no ascendant trend, the median score in fact being very slightly submissive. A somewhat higher median was found among production tracers, a group of younger men in the planning department whose jobs consist of following up orders in their progress through the factory. It is of course possible that success as a factory foreman depends to a larger degree upon factors other than those measured by the A-S form, such as age, long experience with the work involved and the resultant respect accorded by subordinates, ability to get along well with others, and consistent though unassuming persistence. Further studies should be made of ascendancy-submission traits among shop foremen.

As a final step in the revision process, the 350 experimental cases were analyzed as to the frequency of response and consequent diagnostic value of each response in relation to the total score. As a result, minor adjustments were made in weighting, to insure adequate internal consistency.

The A-S Revision for Business Use as now available[3] is standardized for adult males and has not been standardized for use with women. It is not a substitute for the original Allport form which is to be preferred for many purposes. The revised form is particularly suitable for personnel directors engaged in recruiting.

Manuscript received July 8, 1932

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[3] Copies of the Revised Test for Business Use and manual of instructions may be obtained from the Psychological Corporation, 522 Fifth Avenue, New York.

Economic Difficulties of Older Persons

By Solomon Barkin, *New York Commission on Old Age Security*

Older persons as a class, particularly industrial workers, suffer from employment handicaps which make sharp inroads into their economic security. A program to combat this situation is here advanced.

Constructive action must be directed toward improving or maintaining the work qualifications of older persons, uprooting age prejudice, effecting a better distribution of employees among jobs, relieving the labor market of the marginal older workers by retirement and developing a general economic policy which would effect an expansion of work opportunities.

THE outcry concerning the position of the older person in our economic society has grown out of a conflict which is deeply rooted in contemporaneous thought. There prevails an explicit acceptance of the wage system as an arbiter of the labor market. Yet, at the same time, there is also present constant dissatisfaction with the human costs resulting from the operation of this method of economic control. To temper its otherwise inevitable effects, laws have been adopted to regulate hours, work surroundings, minimum conditions and wages of employment and provisions for the unemployed. The alleged effect of our economic organization on the older person has given rise to old age pension legislation and to constant pleas for additional remedial action. An accurate understanding of the exact economic difficulties which the older persons encounter is necessary before new types of control and basic changes in our methods of regulating the labor market are considered.

THE FIRST ECONOMIC DIFFICULTY—EMPLOYMENT HANDICAP

The controversy during the last decade has been primarily centered about the older person in industry. The interest lies in those individuals who could be profitably employed, but are not being given the proper opportunities. The employer, it has been contended, is using his right to select employees in an unwarranted manner, prejudicial to the interests of the older person. Industry had deliberately undertaken to make the chronologically middle aged persons, also economically aged and to set them on the "scrap heap at forty."

It is, of course, known that these assertions have been very widely challenged. It is not the unanimous opinion of all groups that the older person is "employment handicapped." Even

those who do agree with this basic assertion differ as to the cause of the difficulties. Some ascribe the handicap not to the age prejudice of the employer, but to the physiological, mental, and vocational disabilities of this class of applicants and employees.

We have facing us the question whether the older persons, including both the middle aged and the aged, are "employment handicapped," and whether this handicap is out of all proportion to the actual productive potentialities of this group. We have also the problem of ascertaining the causes of their difficulties. The answers to these questions will in the last analysis depend upon the older person's security at his job and his position as an applicant for work. To find a clear basis of fact for judging the real condition of the older person we must undertake to examine his position in both of these situations.

Security of the older employee

Necessarily the question which first arises is whether the older person will be employed at some job until he is considered superannuated by industry. If he is, much of the extended discussion of the problem of whether the older person is handicapped will be unnecessary. It must, however, be immediately set down that that person's chances of retaining a job until old age are indeed meagre.

American industry has long been characterized by extremely large labor turnover rates. Very many persons are attached to plants for only brief periods of time. The result is that the number of the originally hired who survive in the employ of a plant is in time very markedly reduced. A study of one organization disclosed the fact that after the end of six months only 26.3 per cent and after one year, only 17.6 per cent of the persons originally hired had remained with the plant. Furthermore, a study of the New York State manufacturing industries indicates that 11.3 per cent of the personnel of these plants had been with them for less than one year; 35.7, for less than 2 years; 50.4, for less than 5 years; and 89.4, for less than 10 years. The prospects for remaining with a concern until retirement are, therefore, not at all bright.

Persons who do continue their association with one organization for a long period enjoy considerable security of employment. Many investigations have pointed out that the stability of a group of employees grows with increasing length of service. Older persons also generally represent individuals with long service records. In fact, a study of the separations from employment which took place among a group of 2,100 New York State manufacturing concerns in the latter half of 1930 indicates that the age which is most secure from discharge for males is the very oldest age group, 70 years and over, and for females, 50-54 years. In other words, the likelihood of separation because of discharge decreases consistently with age for men, and declines until 40 and rises after 45 years in the case of women. As for security from selective lay-offs, the older person appears to possess a similar advantage over his younger brothers. The most secure age for males is 65–69, while that for females is 50–54 years. The older persons are apparently not

among the first to be laid-off except when they attain old age. They are not summarily dismissed from a plant. On the contrary, most of the weeding out of employees takes place among the younger individuals, particularly below 40 years. The survivors enjoy greater security and become more stable with advancing age until the very oldest ages, 65 for males and 55 for females.

Individuals who leave the plant or have been dismissed by the employers are not the only ones who fail to realize the desire to remain attached to one plant until retirement. The large turnover of business establishments which usually exists in the community in good as well as bad times dislodges many veteran employees from secure positions. A study in 1927 estimated that the average life of manufacturing establishments is seven years, of retailing concerns 7.1 years, and wholesale firms 7.5 years. The closing or removal of individual plants, or the merger of business units, adds to the number of cases of wholesale lay-offs. When a business enterprise closes, the long service employee loses all of the advantages which he may otherwise have enjoyed in the selective lay-off process. All employees are displaced irrespective of the value of their services. Sometimes the older persons are rewarded with bonuses and pensions but only rarely. The old as well as the young are placed on the labor market to fare as best they can.

In view of the low survival rates for employees, and the high mortality rates of business establishments, it is not likely that any large proportion of the older person population will be in a position to enjoy the advantages of security which they might possess had they remained with a stable concern.

The older person as an applicant for employment

Since the opportunities for permanent berths in industry are very restricted, the position of the older person will depend largely upon his facility in securing a new job after losing or leaving one. It is in his effort to obtain new work that the older person will encounter the greatest handicaps. After some experience with employers, he will conclude that he is likely to have less success than younger applicants. In fact, the studies of the New York State Commission on Old Age Security suggest very definitely that the older person is "hiring handicapped" in the manufacturing industries of New York State. Available data also prove beyond doubt that these industries are not exceptional in this respect. Nor is the situation peculiar in this state. The older person is "hiring handicapped" in most industries and most industrial areas.

A survey of the age hiring policies governing new applicants for employment indicates that the older person is definitely barred from 59 per cent of the available jobs. Furthermore, he will only be hired for an additional 30 per cent under the terms of a "special care age hiring policy." In other words, at 89 per cent of the jobs the older seeker for employment will be discriminated against. At only 11 per cent will he be judged solely upon his merits and have access to straightforward competition with other applicants.

An extensive survey of the payroll additions for a period of three months during the latter half of the year 1930 confirms the above conclusions. The age of the hiring handicap for employment with new concerns appears for men at the age of 35 years and that for women at about 30 years. In comparison to the ability of the average man in industry to obtain employment, males in the age group 35–39 years were 13 per cent handicapped; those 50–54 years, 66 per cent; and those 60–64 years, 83 per cent.

Nevertheless, the older person applying for a position with a concern with which he had been previously associated is generally able to obtain much more careful consideration. He is less likely to encounter the age prejudice. Rather, a good previous employment record may often lead to preferential treatment. The actual age of hiring handicap for former employees appears to be from ten to fifteen years later than for new applicants, namely, at 45 years for both males and females. Moreover, the percentage of rehiring handicap among older employees is considerably smaller. In the case of males, it is 37 per cent for the age group 50–54, and 63 per cent for the age group 60–64 years These percentages of hiring handicap represent very decided increases in the ease of obtaining employment.

Extent of unemployment

The best evidence of the essential accuracy of the above conclusions are the results of the various censuses of unemployment conducted during the last several years. They all establish the one fact: that the proportion of the unemployed increases after the age of 35, 40, or 45 years depending upon the particular area or industry investigated. For our present purpose, we may select the report on unemployment among persons attached to the manufacturing industries of New York State in 1930, according to the federal census of unemployment. These results suggest that the smallest percentage of unemployment in the case of males was to be found in the age group 35–39 years, and in the case of females, in the age group 45–49 years. After these ages, the proportion of the unemployed increases with advancing age.

The older person is maintaining a losing struggle. His economic position generally becomes less secure and his earning capacity and ability for self-support declines with advancing age. Those who are fortunate enough to have been long associated with a stable firm are likely to enjoy special considerations which would tend to assure them considerable economic security, but not the maintenance of their level of earning power. They will be retained, and if necessary, job adjustments will be made to lengthen their work-life span, and finally, they may perhaps be pensioned. But no such treatment awaits the other men and women who constitute the largest group among the older working population. They must attempt to adjust themselves to the demands of industry and surmount the hiring handicaps as best they possibly can. So long as they are considered employable by industry, their difficulties may be referred to as handicaps in competitive power rather than the complete lack of

industrial quality. As such, the older wage earners who are eligible for employment are as a class "employment handicapped." In addition, there are large groups which become economically aged or superannuated.

The basis of the handicap

The deficiencies of the older persons as competititors for work generally arise from two special sources. There is, in the first place, age prejudice. He may be completely barred from a plant or a list of jobs or may be hired only after he has proven that he does not share the alleged deficiencies of the group or that he possesses qualities which would compensate the employer for the risks and costs which are associated with the employment of the older person. In other words, instead of being treated as an individual applicant, he is segregated into a special class. His individual desirability is interpreted in terms of the supposed defects of the class.

The age prejudice is founded, in the first place, upon the conviction that the older person is a liability to the concern because of his disabilities. The defects are believed to be so widespread and deeply rooted that only the exceptional older person will not possess them. In the second place, other employers believe that the probable present costs, arising out of the preliminary period of adjustment and immediate benefits, such as group insurance and workmen's compensation, or future costs, such as job transfer for the aged, old age pensions, sickness benefits, and probable early breakdown, would be so great as to make it inadvisable to hire such a person. In the third place, personnel policies such as those relating to promotion from within and provision for the company's own older workers, may prove inimical to the addition of new older employees. In the fourth place, the firm may reason that since they have offered various inducements to workers, in the form of benefits, additional security of employment, or better work surroundings, it is their right to select those whom they believe are likely to give the most extended and most productive service. Since the middle aged will in all probability show early signs of depreciation, it is concluded that the better employees are likely to be found among the younger applicants.

The second source of handicap is the actual rather than the suspected deficiencies of the individual older person. In so far as they exist, the superimposed age prejudice does not inflict any grevious injustice according to the modern employment standards. Employers are entitled to select the most capable men from among the applicants. As a group, the older persons undergo physiological and mental deterioration. Despite this fact, the studies of the New York State Commission on Old Age Security indicate that they constitute 40 per cent or more of the personnel of a large number of the older industries of the state such as beverage, piano, organ and clothing manufacturing, and saw, planing and cotton mills. However, in the mechanized industries they appear to be at a disadvantage. It is evident that the hold of male workers on jobs calling for machine work weakens after 45 or 50 years of age.

In so far as the personnel policies adopt sweeping age prejudices, the older persons as a class are certainly wronged. It is apparent that many qualified and highly efficient older workers are obtainable in the labor market. Age discrimination would bar them from employment despite their productive abilities.

THE SECOND ECONOMIC DIFFICULTY—SUPERANNUATION

The analysis of the methods of choosing workers for employment has suggested that industry makes one further distinction. It differentiates between those whom it considers employable and those not eligible for work. Industry has established a line of demarcation on the basis of its concept of what the minimum requirements of economic usefulness are which would permit profitable production. The second of the economic difficulties of the older person is, therefore, his inability to maintain his economic usefulness at such a degree of proficiency as would be considered marketable in industry. When the cause for this reduction in economic value to a level that compels retirement in senility, the person is considered superannuated.

The effect of this economic difficulty on the older person himself can be readily appreciated when it is realized that premature old age is not an uncommon phenomenon among the wage earning classes. In fact, there are sufficient available data to prove that the number of workers who become superannuated during the fifties is considerable and that superannuation becomes a mass phenomenon soon after the beginning of the seventh decade. Available estimates for New York State in 1930 show that 37.3 per cent of the male population 65 years and over, and 51.6 per cent of the male population 70 years and over were superannuated. The large number of border line cases which existed during the early days of the current depression have no doubt since fallen into the ranks of the superannuated. The huge number of recipients of old age assistance in New York State, 52,985, on October 1, 1932, despite the required minimum age of 70 years and the many disqualifications, speaks of the economic need and dependence which is prevalent among the aged. This evidence definitely attests to the fact that we must undertake to reappraise our present old age relief system.

A CONSTRUCTIVE PROGRAM

A constructive program must tackle each of these difficulties separately. It is evident that in so far as we seek to meet the problem of superannuation, our principal goals should be to assure the maintenance of the unemployable and to facilitate their retirement from active industry and the employment of the partially employable in sheltered industries. Only one step in this direction has already been taken in New York State, namely, the old age security law. But this law is not adequate to meet the entire problem. The age of eligibility under this law should be lowered immediately as well as its terms made more liberal to provide for a larger proportion of the needy superannuated and invalided persons.

In connection with the economic difficulties of the employable older

person, we face a more complex problem. It is essentially a product of the surplus of labor. So long as this condition exists and the employer retains his right to place at each job the superior rather than the marginal worker, so long will the handicapped groups be discriminated against. Most of our constructive thought must be directed toward the improvement of the present methods of utilizing the available labor force which result in the unemployment of millions of workers even in the best of years, and toward increasing the stability of business enterprises. Nevertheless, immediate action for the older person in industry may be undertaken. It must seek to remove for him the barriers to employment which stand in his way. In this program, both private industry and the state must coöperate. Industry must destroy every suggestion of its sweeping age prejudice, not only by repealing formal rules but also by eliminating prejudicial practices. All applicants for employment should be appraised solely upon the basis of present and future productive value when permanent additions are being made. If the scheme of employee benefits does not permit such an unequalified individual approach, the older applicant should waive his rights to them. He must be given preference to the jobs which he can fill as profitably as the younger man. The latter must occupy new employments rather than seek those already overcrowded with older persons. If some physical or vocational handicap stands in the way of the employment of the older prospect, he should be able to turn to the state rehabilitation bureaus for advice and aid. Furthermore, definite steps should be taken to improve the security of the employed older persons. The most immediate contribution which may be made in this direction is the development of definite plans for the adjustment of the older employee in industry so that proper provision may be made for his transfer to better adapted jobs. Employers will then be less inclined to discharge them summarily when evidence appears of a decline from the peak of economic usefulness. A dismissal bonus to facilitate reëmployment and training might also be adopted for this purpose.

The position of the older person may be improved by having industry judge him on the basis of his qualifications for specific jobs, prefer him for those at which he can be profitably employed, and retain him through periods of business fluctuations. However, so long as the labor surplus continues and unemployment is widespread, the older persons with distinct physiological, mental or vocational deficiencies, and many without them, will remain "employment handicapped." If the considerations indicated above, which should be shown him, are not granted, his intolerable condition will remain and will no doubt become aggravated with the increase of the number of older persons in the population.

We also have available two additional alternative plans for action to meet the impending social problem. These are either to provide for the compulsory employment of stated percentages of older persons by industrial establishments, which in the face of current definitions of the rights of employers appears to be an improb-

able course, or to establish contributory old age pension schemes which will open up the opportunity for earlier retirement than now prevails to those older persons whose employment handicaps have virtually ruled out a living annual wage. The latter plan must be immediately adopted. It will serve to relieve the labor market of some of the pressure which now exists and will furnish a steady outlet for some of the tremendous capacity of production which now remains unexploited.

Paper presented before Annual Conference of Personnel Research Federation, Nov. 18, 1932.

Does It Pay to Change Positions in the Field of Education?

By Ruth Strang, *Teachers College, Columbia University*[1]

Dr. Strang finds no clear warrant for "moss-gathering."

Data from vocational history blanks, as to the educational and vocational experience of a group of 546 women in various educational positions, show that: (1) the average length of stay in a position was approximately three and a half years; (2) that the mean number of changes made during their entire professional careers was 4.6; (3) that the correlation between length of stay and salary was .17 $\pm$ .03, and this decreased to .05 when the age factor was held constant.

As in Kitson's study of a group of office workers, no evidence was obtained that a person who persists in a given position will receive a higher salary than one who changes positions more frequently. Whether it is financially advantageous to avoid being a "rolling stone" depends upon so many factors that generalization is impossible.

WHICH pays the young worker better, to stay with a single concern and work up in it, or to change with reasonable frequency as attractive openings offer?"[2] Kitson and Keys studied this question with reference to 417 male high grade office workers, of whom 170 were studied in detail. From their data they concluded that "the popular idea that a young man who remains longer with a given firm will outdistance the one who changes more frequently finds no support from the salary figures of this group."

The present investigation aims to answer the same question with respect to a group of 546 women in various eduational positions. (See table 1.)

The data were secured from vocational history blanks on which were recorded consecutively the educational and vocational experience from the time of graduation from high school to the time of filling out the record. Thus the entire vocational history of each person was obtained. These histories furnished the following facts:

1. Age at the time of writing the vocational history
2. Salary last received
3. The average number of half years spent in each position from the first to the last occupied
4. The number of changes made during the course of their professional careers

[1] Special acknowledgment is made to Miss Frances L. Seibert for her assistance in this investigation.

[2] Harry D. Kitson and Noel Keys. Does It Pay to Change Jobs? *Personnel Journal*, 1928, vol. 7, p. 33–37.

DESCRIPTION OF THE GROUP STUDIED

Table 2 shows the wide range in each of these items: annual salary, from $600 to $6600; age, from 23 to 68 years; one-half to five years. The means show the group to be mature and, as compared with male office workers, vocationally stable; for the average length of stay of this group of educational workers is almost four times

TABLE 1

Average length of stay classified according to positions held at time of filling out vocational history

PRESENT POSITION	AVERAGE NUMBER OF HALF YEARS PER POSITION FROM INITIAL POSITION TO PRESENT POSITION			NUMBER OF CASES
	Lowest	Mean	Highest	
1. Elementary teacher	6.1	6.1	6.1	2
2. High school teacher	2.0	7.9	36.0	86
3. High school principal, assistant principal, or supervisor	2.0	7.9	20.0	50
4. College teacher	2.2	6.1	16.0	54
5. Assistant dean, head of residence	2.0	6.0	40.0	68
6. Dean in junior or senior high school	1.1	7.4	20.3	120
7. Dean in college or normal school	2.0	6.8	23.0	97
8. Y. W. C. A., club worker, social worker, religious worker	2.0	4.9	11.0	22
9. Nurse and health worker	1.0	5.1	10.0	37
10. Miscellaneous group	2.0	6.4	18.6	10
All groups	1.0	6.8	40.0	546

TABLE 2

Range of salaries, ages, average stay in positions, and average number of changes of 546 people in educational positions

	LOWEST	MEAN	HIGHEST	SIGMA
Annual salary last drawn	$600	$2436	$6600	$815.16
Age	23	39.5	68	7.82
Average number of half years in positions from initial position to present position	1.0	6.8	40.0	4.27
Number of positions	1	4.6	14	2.01

average length of stay in positions, from one-half year to 20 years; and average number of positions, from one to 14. Approximately one-third of the group remained from one-half to two and one-half years in a position; approximately one-half, from two and

that of the office workers studied by Kitson and Keys. Elsbree[3] has shown that the percentage of turnover among

[3] Willard S. Elsbree, *Teacher Turnover in Cities and Villages of New York State.* New York: Teachers College, Columbia University, 1928.

high school teachers in New York State was 15.4; among principals, 5.8; and among supervisors, 4.9. Deans of women in normal schools, teachers colleges, and liberal arts colleges were also found to be a comparatively stable group vocationally, the average turnover during a ten-year period being 14.3 per cent.[4] The subjects of the present investigation seem to belong to a group not so likely to shift from one position to another as do workers in certain other fields.

Both the average number of half years per position and the number of changes in position (table 2) may indicate, however, either progression in the chosen educational field or vocational maladjustment. It may be that these people have changed their positions four or five times during their professional careers because of openings which enabled them to advance along the line of their major interest. Or, it may be that because of inadequate vocational guidance in normal schools, teachers colleges, or liberal arts colleges, students have learned rather late that there were a large number of different kinds of teaching and advisory positions in the field of education, some of which were more suited to their interests and abilities than the positions first coming to their attention.

Since this is a non-homogeneous group, it will be of interest to ascertain whether the average length of stay in some types of positions is greater than in others. Individuals who at the time of filling out the vocational histories were teachers, deans of girls, or principals in high schools have remained slightly longer in each position occupied during their professional careers than have teachers and deans in colleges and normal schools, nurses, and Y. W. C. A. and social workers. As will be seen from table 1, however, the variation in average length of stay per position among the ten different groups represented in this investigation is small.

TABLE 3

Coefficients of correlation between factors

	SALARY LAST DRAWN	AVERAGE NUMBER HALF YEARS PER PERSON	AVERAGE NUMBER OF CHANGES
Age	.34 ± .03	.38 ± .02	.38 ± .02
Salary		.17 ± .03	.19 ± .03
Length of stay			−.35 ± .03

RELATION OF SALARY AND AGE TO LENGTH OF STAY AND NUMBER OF CHANGES

The coefficients of correlation in table 3 give no assurance that it is financially advantageous for people in certain educational positions to remain a long time in each successive position. The coefficient of correlation between salary and average length of time per position is only .17; between salary and number of changes in position, .19. When the age factor is eliminated by

[4] Sarah M. Sturtevant, Ruth Strang, and Mary Hooton. Turnover Among Deans of Women, *Personnel Journal*, 1930, vol. 8, p. 384-392.

the partial correlation technique, the coefficient is reduced to .05.

As might be expected, the correlation between age and salary, and age and length of time per position is somewhat higher and is reduced very little when the third factor is held constant:

Age and salary, length of stay held constant	.30
Salary and length of stay, age held constant	.05
Age and length of stay, salary held constant	.34

These results are strikingly similar to those obtained by Kitson and Keys and indicate that in the educational, as well as in in the business world, there is a lack of relationship between salary and persistence in a given position.

There is some evidence from the data that these educational workers fall roughly into two groups: those who change their positions because of advantageous openings in their field of major interest, and those who change because of dissatisfaction with their present position. It might be found that it pays the former group to make changes, whereas in the case of the latter group a mere change in position does not necessarily represent professional progress.

SUMMARY AND DISCUSSION

A study of 546 women engaged in ten different types of educational work shows that

1. The average length of stay in successive positions is from three to four years. People in high school positions have usually remained slightly longer in their positions than people on the college and normal school levels. This may be due to the fact that the latter are usually the more recent positions.
2. Women who have reached the average age of 40 years have made from four to five changes in the course of their professional careers.
3. The correlation between two measures of vocational stability—namely, length of stay in position and number of changes,—is only .17 and .19 respectively and dwindles to .05 when women of like age are compared. Studied as a whole by means of the correlation technique, members of this group who have remained a comparatively long time in each position have not profited financially by so doing.

Whether it is financially advantageous for a person to be vocationally a "mossy stone" rather than a "rolling stone" depends upon so many factors that generalization concerning the question is impossible. Among the possible factors are the following:

1. The type of educational institution in which the individual begins his professional career. Obviously, changing a position would be more advantageous for a person in a small, economically handicapped community than for one in a large city having a high salary schedule.
2. The type of position occupied. A person whose first position is that of an elementary teacher

is, under the present salary conditions, more likely to better himself financially by changing to a position on the so-called higher educational levels than one who enters these higher levels immediately after graduation from college or professional school. As a matter of fact, of the 158 individuals who began their professional work as elementary school teachers only two remained in the elementary school field at the time of writing the vocational history.

3. The degree of vocational adjustment in the first position. An individual well placed vocationally in her first position might be expected to develop the possibilities of the position and to secure to a greater extent the maximum financial rewards offered by the positions than a person not suited to the position by personality or training.
4. The initiative of the individual. A person who is alert for new openings and has prepared himself professionally for positions of greater responsibility and opportunity would naturally profit more from changes in position than a person who is passive in respect to his vocational future.

Manuscript received July 18, 1932

Personnel Books

EDITED BY O. MILTON HALL

AMERICAN BUSINESS LEADERS

By F. W. Taussig and C. S. Joslyn. New York: Macmillan, 1932, xiv + 319 pp., $3.75

Reviewed by Z. C. DICKINSON, *University of Michigan*

Usable questionnaires were returned by nearly half of the 15,000 prominent corporation directors to whom Taussig and Joslyn mailed their blank forms (in November 1928). By means of checks and numerals the respondent indicated: his present age; age when he first entered business; present principal position; age when he assumed it; approximate size of present business; occupation of father and grandfather; schooling; aid from relatives and friends. Incomplete and supplementary returns brought up the total of responses on the one item of father's occupation to 73 per cent of the original addressees. The numerous tabulations are naturally of interest from many points of view; the emphasis, however, is indicated by the subtitle, *A Study in Social Origins and Social Stratification.*

Using census data on occupations in 1880 to indicate roughly the numerical proportions among the social classes from which these respondents sprang, the authors proceed to show that the families of business executives and owners in past generations have contributed many times "their share" of the business leaders of 1928. Professional families came next, then minor business people. Farmers and skilled laborers made a small proportionate contribution, but larger than common laborers; nevertheless the fathers of 2.2 per cent of these respondents were laborers.

Do business men constitute a nearly closed caste; or is the leader in this field biologically born, not environmentally made? Our authors argue that their data support more strongly the innate superiority hypothesis. The mere unequal contributions of the social classes, to be sure, accord equally well with the environmentalist theory; but there are other hints. First, laboring families do not produce *business* leaders in significantly greater proportions than they produce leaders in *the arts and professions*, where academic training is a formidable added condition of success. (Some 25 per cent of these respondents had no more than grammer school education.) Also, say Taussig and Joslyn, "it does *not* appear that a majority of our respondents had help from relatives and friends; that the more successful among them were thus favored to a greater extent than the less successful; that the business leaders from the lower classes on the whole gave evidence of conspicuous ability; or that those who sprang from the lower classes took a significantly longer time for achievement than those from the favored classes." (p. 263) The case thus built up by sagacious interpretation of a large body of original and relevant facts is a most welcome check on our prejudices.

It is hoped that this admirable investigation will provoke others in the same field. How does the European situation, for example, compare with our own? These business leaders of 1928,—how many have since been dethroned or undermined? To what extent are the scions of upper social classes favored by their mere polish of manner and their "contacts," as well as by more overt aids from relatives and friends? How much helped by the general notion that the son of an able (or for other reasons prominent) person *must* "have the right stuff in him?"

EDUCATION AS GUIDANCE

By John M. Brewer. New York: Macmillan, 1932, ix + 668 pp., $2.75

Reviewed by HARRY D. KITSON, *Columbia University*

This is essentially a book on the philosophy of education. The author examines modern education in order to find out whether it is fulfilling its responsibilities. In doing this he naturally needs to start from a point of reference. This he establishes in terms of the objective of education, which he formulates as that of "teaching young persons to live."

After making his examination the author concludes that, while educators give lip service to this objective, they fail to embody it in practice. As a remedy he proposes that they inject into the educational process the spirit and methods of guidance. The agencies recommended are: (1) sample activities based on life situations; (2) classes for information and discussion; and (3) individual counseling. The curriculum should be remade along lines illustrated with sample units.

The author specifies the following forms of guidance: educational, vocational, home relationships, citizenship, leisure and recreation, personal religion, ethical attitude, thoughtfulness and coöperation, wholesome and cultural action, and personal well-being. (One wonders what the latter is until, on perusing the chapter devoted to it, the reader discovers that it is our old friend, health-guidance.) In differentiating between these various forms, the author uses as his criterion the goal toward which the guidance points. If the chief interest in a case is in helping the individual make a decision about his vocation, the guidance may be classified as vocational. If the immediate problem is that of succeeding in a course in geometry, the guidance would be classified as educational. If it occurs with respect to a religious belief, it would be religious guidance.

A chapter is devoted to the administration of guidance and the use of certain techniques, such as tests, rating-scales and records.

The author recognizes that no pronounced changes in school curricula are likely to be made soon, so he gives in his final chapter suggestions for using the traditional subjects for purposes of guidance. Fifty-four pages are devoted to illustrative projects which should give practical assistance to the many teachers who wish to introduce the point of view and the methods of guidance but who are hampered by a petrified curriculum.

When we try to discover what the author means by guidance we find that he defines it exactly as he defines education—teaching young persons to live, thus giving the impression that he identifies the two as one. Nevertheless, he frequently treats them as distinct. Thus, (p. viii), he speaks of "applying" guidance; (p. 593), "the costs of guidance" as distinct from those of education; (p. 110), "guidance curriculums," etc.

One reason for this confusion appears to lie in the fact that in certain discussions the author has in mind the imperfect kind of education now current, while in other passages he is thinking of the ideal. But if this ideal education is synonymous with guidance, there is no use for the term "guidance."

The most important reason for the confusion between the two terms, however, lies in the meaninglessness of the word "guidance." Used in a general sense it is utterly unmanageable. Only when used in a particular situation does it have significance. Indeed, many persons recognize only two legitimate uses of the term—those comprehended in the terms *vocational guidance* and *educational guidance*. If this dual undertaking is carried on properly, the social, physical, mental, moral, and economic aspects of the individual will receive attention. When applied to the other types of activity to which it is commonly attached, it becomes not guidance but instruction or training. Thus the term "health guidance" is a misnomer; the services rendered to children in this respect are either diagnosis —the effort to discover the present condition of the child—or instruction, designed to teach him how to take care of himself. So-

called religious guidance is not guidance, but instruction.

In consequence of the tendency to apply the term *guidance* to miscellaneous activities which do not logically belong together, the word as a general term has ceased to have meaning. It has become nothing more than a shibboleth—one of those words that educators love to roll under their tongues for a period and then cast aside for a new sweetmeat. Perhaps it will go the way of its predecessors, "project method," "correlation of subjects," "socialized recitation," etc. It is to this general ineptitude of the term that we may attribute some of the confusion in the book.

In view of Dr. Brewer's interest in vocational and educational guidance, many readers undoubtedly will look in the book for a systematic presentation of this field. Naturally, they will not find it, since the author set out to treat it only in its educational setting. The book should be judged as a philosophy of education. Thus regarded, it should lead educators to examine their efforts and discover the respects in which they fail to fulfil the aims of education. To those who will submit to this searching self-analysis the book will give constructive suggestions as to ways through which they can institute needed reforms.

PSYCHIATRY IN EDUCATION

By V. V. Anderson. New York: Harper, 1932, 430 pp., $4.00

Reviewed by J. E. WALTERS, *Purdue University*

Written in the well founded belief that psychiatric technique and mental hygiene principles and procedures will become a necessary part of the equipment of every teacher, Dr. Anderson's book on psychiatry in education has in itself an integrated personality and covers not one phase of education alone but the whole of educational life from the primary school through college. First, last, and always he rightfully emphasizes that the development of the whole personality of the individual is the aim equally of education and psychiatry.

As one reads the book he might think of the psychiatric procedures as education for life's sake—not education for education's sake. This book shows clearly that the integrated personality, resulting in wholesome achievement and happy living, is the final aim or end in education. College teachers and personnel officers will naturally be interested in the chapter on Psychiatry in College. By substituting the word "student" for "child" they will find relevant principles in the chapters describing the mental hygiene procedures in secondary education, the junior high school, elementary grades, the primary school and the hospital school. For example, the statement "It is clearly unfair and boring to the *student* to hold him in *first year* English because his mathematics is of that level" is true for the college with the change indicated in italics. This same analogy by substitution holds true for most of the book.

The numerous cases given and the description of procedures provide splendid examples of the methods of diagnosis, treatment, training, and follow-up of the individual student. The whole book seems to be a description of the methods of individualizing education.

The only adverse criticisms possible concern the lack of cases and detailed information on psychiatry in college, and a weakness on the side of methods and procedures. However, Dr. Anderson promises a full description in a later manuscript on personnel theory and practice. The qualifications of the teacher are discussed at length but the methods of ascertaining them are not satisfyingly explained. The statement to the effect that the purpose of education is to integrate the whole personality of the student is possibly too often repeated.

It is a book of great value to education, and one which every teacher, personnel officer, student adviser, and in fact everyone connected with education should read.

ADMINISTRATION OF STUDENT PERSONNEL SERVICES

In Teacher-Training Institutions in the United States

By Marion Ernest Townsend. New York: Teachers College, Columbia University, 1932, ix + 115 pp., $1.50

Reviewed by Mary A. Wegener, *Appointments Bureau, Columbia University*

Dr. Townsend presents a study of the double question: What policies should be established and what procedures followed in the program of personnel services for students in teachers colleges; and what are teachers colleges doing to provide such programs?

A searching inquiry through the literature of recognized authorities revealed a set of basic policies, which are defined under the following heads: Selection, Orientation, Health, Proper Standards of Living, Counsel and Advice, Extra-Curricular Activities, Placement, Follow-Up, Personnel Records, Personnel Research, Staffing, Organization.

A check-list of 355 administrative procedures within these classifications, gathered from literature in the field and personal visits to some 24 institutions, was submitted for evaluation to a "Jury of Experts," consisting of 57 persons representing men of outstanding accomplishment in education, administrators of college personnel, and nationally known men in industrial personnel. It was also checked for present usage by the presidents of 105 teachers colleges.

Thus it was found, for example, to be extremely desirable that a complete school history be required of a student for entrance to college, but that only 16 per cent of the colleges make this requirement a practice. It is shown that teachers colleges for the most part fail to use the careful selective procedures which are advocated; that practice varies widely in the administration of health services; that, on the other hand, in attention to standards of living there is greater tendency to use approved technique and so on. Graphic tables show complete detailed list of techniques considered desirable, and record their evaluation and the extent to which they are in use at the present time.

An orderly presentation follows the statement of the problem, through description, validating, weighting and reliability-testing of techniques used, to findings obtained and recommendations made for further study. Appended are a copious bibliography and appendixes giving names of the "Jury," the institutions cooperating, and other pertinent data of interest.

This is a careful work on a subject which must be of live interest to administrators of teachers colleges, indeed should be valuable also to those of other educational institutions on the college level. Useful also it should be to all students of personnel. A scholarly investigation, it is ably presented in lucid, effective language, supported by adequate authority, and it may well be judged a contribution of merit on a timely topic of primary importance in education.

PROBLEMS IN HUMAN ENGINEERING

By F. Alexander Magoun and his students. New York: Macmillan, 1932, 535 pp., $3.50

Reviewed by L. R. Frazier, *The Kroger Grocery & Baking Co.*

To his classes in Humanics at Massachusetts Institute of Technology, Professor Magoun propounds each week a knotty problem in human relations. For most of the problems industry provides the setting and anonymous or imaginary alumni the principal characters.

The present volume is made up of some twenty-five of these problem situations and, for each, a dozen or more representative

solutions turned in by the students. Of course, the result is something of a potpourri. Precocious wisdom alternates with unconscious naïveté; sound thinking is sprinkled with prejudice and rationalization. But it all serves to make quite clear that most of the students were at least trying to live through these situations constructively, which is much better than if they had spent their time absorbing platitudes about human nature.

The author nowhere gives his own solutions nor does he indicate which of the quoted solutions he approves. Some readers may feel that this lack of a one best solution is a weakness in the book. Other readers will appreciate that many of these problems require the projection of one's own personality into the situation, with the result that both problems and solutions will rightly be somewhat different for different people.

There is throughout an amazing variety of style and a delightful freedom of thought and expression. The book is human, even though there may be doubt in some minds as to whether it is engineering.

WAGE RATES AND WORKING TIME

In the Bituminous Coal Industry

1912–1922

By Waldo E. Fisher and Anne Bezanson. Philadelphia: Univ. of Penn. Press, 1932, xxii + 374 pp., $3.50

Reviewed by Charles H. Frazier, *Philadelphia Gas Works Co.*

In this book the authors have laid an excellent foundation for a study of causes and effects of wage policies in the bituminous coal industry, together with the bearing which the organizing of labor has had on these policies. The discussion is limited to wage rates, total opportunity for employment, and living costs as they affect wage rates, for the period between 1912 and 1922. It throws considerable light on changes in the economic condition of mine workers during this decade. As is pointed out, the study of the results of wage policies must await a second volume, now in preparation, which will give figures of yearly earnings of workers.

Since one of the objects of the study is to determine the effect of union policy, all figures are given for union, as compared with non-union and irregular, districts. Wage rate data are further subdivided between the trends for tonnage [or piece] workers, and for men who are paid on an hourly basis. For the former group only relative data are given, showing the trend during the decade studied, whereas some figures on actual rates of day men are included.

The principal virtue of any statistical study is the faithfulness with which charts and tables are limited to relevant material and to presentation of the data from which valid conclusions may be drawn. In this respect, the study is completely satisfactory. As the authors point out, however, care must be taken in interpretation, since the figures are for *relative* changes throughout the decade, and the selection of the base year has an important bearing on the apparent picture of the trend as shown by such figures. To illustrate, non-union workers may have made greater relative gains since 1913 than union workers, and day men than tonnage men, but if, let us say, the year 1900 were taken as a base, the story might be different.

The situation in the industry is so complicated by economic and geographic variables that the authors have wisely been very conservative in interpretating the data assembled, but the conclusions they do point to are well-founded in fact. Their second volume should go further in making clear the trends in labor policy during the decade under discussion, particularly to the lay reader. It is unfortunate that data on

corporate earnings and on fixed charges could not be included, since the whole wage story is not told until these factors are developed.

SHORTER HOURS: A STUDY OF THE MOVEMENT SINCE THE CIVIL WAR. By Marion Cotter Cahill. New York: Columbia Univ. Press, 1932, 300 pp., $4.50.

This concise history of the movement in the United States for shorter hours appears opportunely, when increasing numbers of industrial theorists and practitioners are prescribing reduced working periods as a remedy for at least some of the social ills that have recently afflicted us.

The author sets forth the attitudes and motives of workers and employers which have determined the form and direction that the movement has taken: (a) *Legislation*, whether Federal or State, has been hampered by constitutional limitations, by timorous legislators and by divided counsel among laborers themselves, so that the net result thus far has been nothing more than hour regulation for special classes, such as women and children, governmental employees, those engaged in interstate commerce or in hazardous employments, and a few other groups. (b) *Direct Action*, i.e., negotiation and collective bargaining between organized workers and their employers, a method whose results do not usually extend to unorganized workers. Several typical cases of hour adjustment through collective bargaining are described. (c) *Voluntary Reduction* of hours by employers, almost non-existent prior to the war, stimulated during the war, and again since 1929, but effecting less than either of the other methods.

During most of the period here surveyed, the 8-hour day or, later, the 44-hour week was the goal; more recently, the 6-hour day and the 30-hour week.

Appendices contain convenient summaries assembled from various sources showing the present status and trend of the hours question in the several states, among different occupation groups, etc. The first chapter is a splendid summary of the philosophy and history of the whole issue.

THE ABOLITION OF UNEMPLOYMENT. By Frank D. Graham. Princeton, N. J.: Princeton Univ. Press, 1932, ix + 99 pp., $2.00.

This is a little book with a big idea, an idea admittedly not new but so plausibly presented that one wonders whether it is the magic formula that a hard-pressed world has sought during these recent years.

Leaving the delights of detailed diagnosis of our economic maladies to others, Professor Graham brusquely prescribes his remedy, "employment *a*ssurance," as an "infinitely superior alternative to unemployment insurance, to widely distributed short time, ... to a straight dole," to planned economy, or other prescriptions.

Since the success of this prescription will be "purely a matter of administration," we are led almost at once to method of organization. The author suggests a National Emergency Corporation (which "would implement the work of the Reconstruction Finance Corporation") to "arrange for the employment of all willing, and at present involuntarily idle, workers at jobs for which they are equipped, and should pay them . . . . in the goods they themselves turn out." Details as to the ideal organization and functioning of this corporation are then set forth in 25 concise paragraphs. In chapter V, he anticipates possible objections, and in chapter VII calls attention to some substantial social gains that may reasonably be expected.

Professor Graham admits that the proposed system "would, no doubt, compare unfavorably with that of industry organized in the usual way *and working smoothly*." His is an emergency proposal. The more widespread the scope of operations,—state, regional, national, comprehending all varieties of producers—the greater the assurance of success. It is another occasion when, "if we would guide by the light of reason, we must let our minds be bold." Knowing how doubly hard it is to be bold in

such uncertain times, the author sets forth in an appendix, a "proposal for a limited and easy application of the principle of creation of employment."

COMMON SENSE APPLIED TO MOTION AND TIME STUDY. By Allan H. Mogensen. New York: McGraw-Hill, 1932, 228 pp., $2.50.

The phrase is usually "time and motion study." Mr. Mogensen's emphasis is indicated by the reversal in his title, *Motion and Time Study*. For several years he, as an assistant editor of *Factory and Industrial Management*, has been stimulating executives to use motion and time study and has sponsored a series of articles on the subject. These articles are reprinted to make up a majority of the chapters. The picture is filled out with chapters original with the author.

While thorough study of the book will teach much in the way of techniques of motion and time study, this is not its greatest strength. For this purpose a somewhat more systematic treatment would be desirable. But the reader will inevitably come away with a real appreciation and understanding of the subject, and probably with enthusiasm too. The author takes motion study out of the laboratory. He makes it common property of every person in the plant.

Personnel managers will be especially interested in the emphasis put upon the uses of the camera in training.

TIME AND MOTION STUDY (Second Edition). By S. M. Lowry, H. B. Maynard, and G. J. Stegermerten. New York: McGraw-Hill, 1932, xviii + 471 pp., $2.50.

In the light of five years use, this standard volume on time and motion study has been revised. The greatest single change is in the greater emphasis placed on motion study. A complete description is given of the methods to be followed in making an analytical motion study, together with a brief description of the motion-picture technique as developed by the Gilbreths.

As in the previous edition, Part I takes up step by step the method of making a time study. Part II describes completely methods of constructing formulas for wage incentives from time-study data. Part III explains in a general way how to organize and supervise time-study, formula, and wage-payment work in any plant.

SELLING YOURSELF. By Edward F. Dalton. New York: Ripton Co., 1932, 161 pp., $1.00.

Mr. Dalton has written well of the essentials of selling yourself, with due attention to well polished shoes, clean linen, cheerfulness, courtesy, and courage. These matters are so well standardized today that they have become almost axiomatic. His advice on sources of leads is also sound, but there again he is on firm ground, as he is dealing with accepted methodology. His chapter on "Repeats"—considering a promotion as a repeat order—is the best part of the book.

Mr. Dalton says very little however, on marketing services where there is no market, but perhaps he is wise in not attempting the impossible.

SCIENTIFIC METHOD. By Truman L. Kelley. New York: Macmillan, 1932, 233 pp., $1.50.

This little book brings into one binding a number of papers and lectures on the general theme of research methods, with special reference to the social sciences. Little continuity is intended between one chapter and another. Several may be mentioned: The Interrelationship Between Method of Research and Field of Investigation; The Objective Measurement of the Outcomes of Social Studies; A Defense of Science in Education; Mental Traits of Men of Science.

MAN AS PSYCHOLOGY SEES HIM. By Edward S. Robinson. New York: Macmillan, 1932, 376 pp., $2.50.

This is a non-technical and clear presentation of modern human psychology. The first and perhaps most important chapter deals with motivation. In this the various

and divergent psychological points of view are excellently synthesized.

The remainder of Part I gives a well-rounded picture of man from the psychologist's viewpoint.

While the title of the book is *Man As Psychology Sees Him*, the second part might be called "Psychology as Man Sees It." In this the author tells of the "aims, deeds, and follies" of scientific psychology.

The reviewer suspects that the clear, capable style and obvious reliability of this book will lead many readers to go further into the subject, guided by its well chosen list of references.

GENERAL PSYCHOLOGY. By Floyd C. Dockeray. New York: Prentice-Hall, 1932, 581 pp., $3.50.

This general psychology text is longer than the average, being particularly rich in description of experimental studies, and containing material not ordinarily found, such as a chapter on social behavior. Considerable emphasis is placed upon the nature of the human organism and its place in the phylogenetic series, to the stimulus-response mechanisms, and to the modifications of behavior of the individual in making adequate adjustment to his physical and social environment.

A number of traditional psychological terms are discarded or carefully defined in terms of the behavior of the total organism.

Problems and references follow each chapter.

FOUNDATIONS OF ABNORMAL PSYCHOLOGY. By Fred A. Moss and Thelma Hunt, New York: Prentice-Hall, 1932, 547 pp., $4.50.

The physical bases of mental diseases might well have been the title of this textbook of abnormal psychology. Moss and Hunt pay as little attention to functional aspects as most writers during the past ten years have paid to organic factors in the production of mental disorders. Speculative material has been omitted; the sciences of chemistry, bacteriology, pathology, endocrinology, and neurology have been depended on in reaching an understanding of mental diseases.

In studying mental disorders, the authors begin by giving the physical agents that produce the disorder; they next consider the underlying tissue pathology which these agents produce; third, they consider the mental abnormalities resulting from this tissue pathology; and fourth, they consider methods for preventing or curing the disorder.

Consideration of specific diseases is taken up in the second half of the book. Disorders, the organic causes of which are known, receive detailed attention in approximately 200 pages. Epilepsy, dementia praecox, manic-depressive psychoses, neurasthenia, paranoia, hysteria, and psychasthenia in all receive but 54 pages. Their organic causes are at best only partly known.

The book is an excellent presentation of the strictly objective point of view in abnormal psychology.

New Books

MANAGEMENT AND ADMINISTRATION

INTRODUCTION TO INDUSTRIAL MANAGEMENT. By E. C. Robbins and F. E. Folts. New York: McGraw-Hill, 1933, 367 pp., $3.00.

PRINCIPLES OF INDUSTRIAL MANAGEMENT. By E. A. Allcut. New York: Pitman, 1933, 232 pp., $3.00.

OCCUPATIONAL INFORMATION

THE INCOME OF PHYSICIANS. By Maurice Leven. Chicago: Univ. of Chicago Press, 1933, 144 pp., $2.00.

GUIDANCE

THE RÔLE OF THE TEACHER IN PERSONNEL WORK. By Ruth M. Strang. New York: Teachers Coll., Columbia Univ., 1932, 347 pp., $2.00.

EDUCATION AND TRAINING

RADIO AND EDUCATION. By Levering Tyson. Chicago: University of Chicago Press, 1933, 314 pp., $3.00.

THE EFFECTIVE DEAN OF WOMEN. By Eunice M. Acheson. Chicago: University of Chicago Press, 1932, 223 pp., $3.00.

ECONOMICS

INTRODUCTION TO TECHNOCRACY. By Howard Scott and others. New York: John Day, 1933, 61 pp., $.90.

STANDARDS OF UNEMPLOYMENT INSURANCE. By Paul H. Douglas. Chicago: Univ. of Chicago Press, 1933, 265 pp., $3.00.

THE A. B. C. OF TECHNOCRACY. By Frank Arkright. New York: Harper, 1933, 81 pp., $1.00.

THE THEORY OF WAGES. By J. R. Hicks. New York: Macmillan, 1932, 261 pp., $2.25.

THE YELLOW DOG CONTRACT. By Joel I. Seidman. Baltimore: Johns Hopkins, 1933, 96 pp., $1.00.

UNEMPLOYMENT AND INSURANCE IN OHIO. By Cincinnati Employers Committee and W. E. Odom. Cincinnati: Industrial Ass'n., 1933, 47 pp., $1.00.

PSYCHOLOGY

ADMINISTRATION OF THE TESTING PROGRAM. By Clifford Woody and Paul Sangren. Yonkers, N. Y.: World Book, 1933, 408 pp., $2.00.

CORRECTION OF DEFECTIVE SPEECH. By E. B. Twitmyer and Y. S. Nathanson. Philadelphia: Blakiston's, 1932, 431 pp., $3.50.

PERSONALITY, MANY IN ONE. By James W. Bridges. Boston: Stratford, 1932, 221 pp., $2.00.

PSYCHOLOGY APPLIED. By G. W. Crane. Chicago: Northwestern University Press, 1932, 586 pp., $4.00.

THE PSYCHOLOGY OF PLEASANTNESS AND UNPLEASANTNESS. By Beebe-Center. New York: Van Nostrand, 1933, 427 pp., $3.75.

PSYCHOTHERAPY. By Hans Prinzhorn. New York: Peter Smith, 1932, 352 pp., $4.00.

SOCIOLOGY

ATTITUDE OF THE JEWISH STUDENT IN THE COLLEGES AND UNIVERSITIES TOWARDS HIS RELIGION. By Marvin Nathan. New York: Block, 1933, 264 pp., $2.00.

RECENT SOCIAL TRENDS IN THE UNITED STATES. Report of the President's Research Committee. New York: McGraw-Hill, 1933, 1669 pp. (2 v.). $10.00.

SOCIAL PATHOLOGY. By John L. Gillin. New York: Century, 1933, 620 pp., $3.75.

Current Periodicals

PREPARED BY LINDA H. MORLEY, *Industrial Relations Counselors, Inc.*

BARTER

BURGESS, J. STEWART (Professor of Sociology, Pomona College). Living on a surplus; idle labor exchanged for excess crops by California coöperatives. *Survey*, Jan., 1933, Vol. 69, p. 6–8.

Work of the Unemployed Coöperative Relief Association in Los Angeles County and of the Unemployed Council of Los Angeles described. The one, an exchange for goods by barter, the other an organization for obtaining direct action on relief through relief agencies.

CONFERENCE METHODS

BOWERS, GLENN A. (Director of Study of Business Conferences, the Inquiry; Member, Personnel Committee, Niagara Hudson Power Co.). Employee and employer conferences. *Industrial Relations*, Sept.–Oct., 1932, Vol. 3, p. 448–451; 505–507.

The first article in this series was reviewed in the last number of *Personnel Journal*. Part II deals with the different industrial groups which need to confer; Part III discusses the functions, purposes and principles of meetings.

ECONOMIC CONDITIONS

AYRES, LEONARD P. (Vice President, Cleveland Trust Co.). Business in 1933. *Clevelander*, Dec. 1932, Vol. 7, p. 3–4, 14, 16.

A statement of actual conditions at the beginning of 1933 by a well-known economist, written in a concise style. Most of the important factors are touched upon and a brief and noncommittal forecast closes the article.

HOAG, CLARENCE G. (Founder, American Proportional Representation League). Depression—the cause and the remedy. *American Federationist*, Jan. 1933, Vol. 40, p. 18–23.

A plea for a stable dollar, written in an easily understandable form.

ECONOMICS

CONDLIFFE, J. B. (Economics Section, League of Nations Secretariat). Economists on the crisis; a survey of current literature. *Library Journal*, Jan. 1, 1933, Vol. 58, p. 14–17.

Running comment on twelve of the more important books of 1930–1932. The scope of each book is well indicated.

EMPLOYMENT EXCHANGES

ALTMEYER, A. J. (Secretary, Wisconsin Industrial Commission). Rôle of public employment offices under unemployment compensation. *American Labor Legislation Review*, Dec. 1932, Vol. 22, p. 147–153.

Probable functions in Wisconsin examined, with some mention of experience in Great Britain and Germany. Not only actual placement work but statistical record keeping, unemployment benefit payments, and decisions are forecast as part of the function of the exchanges.

HEALTH

DUFF, R. ROBINSON (M.D., Chief Surgeon, Central Manufacturing District, Chicago). Industrial surgical practice—practical principles in prospect and retrospect. *Industrial Medicine*, Nov., 1932, Vol. 1, p. 71–74.

Written as a result of 30 years' experience. Dr. Duff points out the different aspects of his work and gives many practical suggestions. The article is illustrated by forms.

Medical service in industry; a statistical outline—with some references to costs and economic returns. *Industrial Medicine*, Oct. 1932, Vol. 1, p. 38–40.

Excerpts from a number of studies already made. The cost figures cover both industrial and individual cases. Gives statistics which are hard to find at short notice.

Economic depression and public health. *International Labour Review*, Dec., 1932, Vol. 26, p. 841–846.

An extended summary of a memorandum prepared by the Health Section of the League of Nations. The four chapters deal with (1) the influence of unemployment on mortality and morbidity statistics, (2) the nutrition of the unemployed, (3) the indications of a reaction of unemployment on health, and (4) the psychological effects of unemployment.

HOURS OF WORK

Growth of 5-day week in manufacturing industries. *Service Letter on Industrial Relations*, New Series, No. 96, Dec. 30, 1932, p. 479–480.

A review of a study recently made by the United States Bureau of Labor Statistics covering 16,105 manufacturing plants. It shows that 6.1 per cent are on a permanent five-day week basis.

Hours and earnings in the hosiery and underwear industries, 1930 and 1932. *Monthly Labor Review*, Nov., 1932, Vol. 35, p. 1136–1150.

Includes figures from 1910 to 1932, 123 hosiery and 76 underwear mills contributed data.

Sitzler, Dr. Fritz (Director in the Federal Ministry of Labor, Berlin.) International reduction of hours of work. *International Labour Review*, Dec., 1932, Vol. 26, p. 765–776.

An explanation of the problem discussed at the Preparatory Technical Conference held in Geneva, January, 1933, to study the technical problems of a reduction of hours of work as a means of alleviating unemployment, a question which is to be on the agenda of the next session of the International Labour Conference. Dr. Sitzler is of the opinion that a 40-hour week is the probable goal of international relations and that the question as to adjustment of wages is the crux of the whole negotiation.

INDUSTRIAL RELATIONS

Merchants' Association of New York. Effect of the depression on industrial relations activities. September, 1932. *Industrial Relations*, Sept., 1932, Vol. 3, p. 428–430.

Twenty-one activities carried on by sixty-one companies are tabulated in various ways. The number of activities shown to have been dropped since June, 1929, is surprisingly small.

LABOR BANKING

Labor banks in Germany. *Monthly Labor Review*, Dec., 1932, Vol. 35, p. 1362–1364.

Shows the operation of the three labor banks (Labor Bank, Volksbank and Wirschaftsbank) for 1929, 1930 and 1931. Amounts given in German and United States currency.

LABOR PRODUCTIVITY

Digest of material on technological changes, productivity of labor and labor displacement. *Monthly Labor Review*, Nov., 1932, Vol. 35, p. 1031–1057.

Eighteen industry studies made by the United States Bureau of Labor Statistics summarized, with a closing section which compares the results of all the studies.

Labor productivity and displacement in the slaughtering and meat-packing industry. *Monthly Labor Review*, Nov., 1932, Vol. 35, p. 1018–1025.

Results of a survey covering, 1914–1931. Includes statistics of number of employees and of man-hours worked.

Labor productivity and employment in the tire industry. *Monthly Labor Review*, Dec., 1932, Vol. 35, p. 1252–1268.

A study made by the United States Bureau of Labor Statistics covering: production and demand for tires (1913–1931); growth of tire industry (1921–1931); productivity of labor (1922–1931); labor displacement and unemployment; causes of technological displacement of labor; factors affecting re-employment of displaced workers.

Man-hour productivity in the petroleum-refining industry in 1929. *Monthly Labor Review*, Dec., 1932, Vol. 35, p. 1283–1292.

Based on data from the Census of Manufactures for 1929. Besides the productivity figures, wages and number of employees are given.

MACHINERY IN INDUSTRY

ANDERSON, MARY (Director, Women's Bureau, U. S. Department of Labor). When machines make cigars. *American Federationist*, Dec., 1932, Vol. 39, p. 1375–1381.

An extended investigation into technological unemployment in the cigar trade as it affects women.

BAKER, ELIZABETH FAULKNER (Barnard College, Columbia University). Technological change and organized labor in commercial printing. *American Economic Review*, Dec., 1932, Vol. 22, p. 669–690.

Shows the effect that a strongly organized trade union has on the location of plants, taking New York, a highly unionized city and Chicago which is much less strongly organized, as examples. Much statistical data is included.

NOISE

Bibliography on noise measurement and noise elimination. *Bulletin of the International Management Institute*, Nov., 1932, Vol. 6, p. 176–177.

Includes 55 entries, many in French and German. There are no annotations.

NURSING SERVICE

HODGSON, VIOLET (Assistant Director, National Organization for Public Health Nursing). Nursing in industry—what are its possibilities. *Industrial Medicine*, Nov., 1932, Vol. 1, p. 97–100.

This article describes some of the basic activities of the industrial nurse, such as accident prevention, sanitation and hygiene, community contacts, etc., as well as the more obvious duties of actual nursing and first aid work.

OCCUPATIONS

Retail Credit Company. Metal furniture trade. *Industry Report*, Dec., 1932, Vol. 7, p. 139–150.

An excellent description of the occupations, health, and safety hazards in this industry.

Retail Credit Company. Motion picture industry. *Industry Report*, Jan., 1933, Vol. 8, p. 1–12.

Health and safety hazards are fully described. The "classification and index of jobs" can be used as the basis for brief job descriptions.

PATENT RIGHTS

NISOT, MARIE-THERÈSE (Member of the Advisory Committee on Intellectual Workers of the International Labour Office). Status of professional workers in the chemical industry. *International Labour Review*, Oct., 1932, Vol. 26, p. 513–529.

From an industrial relations point of view the principal interest in this article lies in the discussion of the protection of the patent rights of employees.

PERSONNEL MANAGEMENT

Hiring and separation methods in American factories. *Monthly Labor Review*, Nov., 1932, Vol. 35, p. 1005–1015.

Results of a survey covering 224 establishments recently made by the United States Bureau of Labor Statistics presented in statistical form. The activities examined are: plant employment offices; methods of recruiting labor; physical examinations; intelligence, aptitude and efficiency tests; age limit for hiring; separation methods; separation or dismissal bonuses; finding new positions for employees laid off; turnover and length of service.

SOCIAL INSURANCE

Social insurance in Denmark. *Monthly Labor Review*, Dec., 1932, Vol. 35, p. 1293–1298.

A summary as of June 25, 1932, of the benefits paid: sickness, unemployment, invalidity pensions, old age pensions, and compensation for industrial accidents. A table of expenditures for 1929, 1930 and 1931 is given.

TRADE UNIONS

COOPER, LYLE W. (Marquette University). American labor movement in prosperity

and depression. *American Economic Review*, Dec., 1932, Vol. 22, p. 641–659.

Read in connection with the article by Miss Hewes on Soviet Trade Unions; in the same issue of the Review this statement of American conditions is particularly illuminating. The political and industrial aspects of the trade union field are both emphasized.

HEWES, AMY (Mount Holyoke College). Transformation of Soviet trade unions. *American Economic Review*, Dec., 1932, Vol. 22, p. 605–619.

A careful historical description beginning with 1920 making comparisons with similar policies in American unions.

TRAINING APPRENTICES

BRIGHAM, L. E. (City Director, Vocational Education, Portland, Ore.). Getting results in apprentice training; a working plan developed through coöperation of labor and industry. *American Federationist*, Jan., 1933, Vol. 40, p. 37–41.

A detailed explanation of the elaborate system in use at Portland, organized by the Oregon Building Congress, the superintendent of schools, board of education, building trades council, etc. In all, 86 men are actively concerned in the program.

UNEMPLOYMENT

Paying for technological unemployment. *Service Letter on Industrial Relations*, New Series, No. 96, Dec. 30, 1932, p. 477–479.

Starting from the negotiations carried on by the International Ladies Garment Workers Union whereby the introduction of new machines postulates the payment of a certain sum by the manufacturer into the unemployment insurance fund of the union, this article comments on the possibility of extending the practice in order to relieve the unemployment situation.

WEINTRAUB, DAVID (National Bureau of Economic Research). Displacement of workers through increases in efficiency and their absorption by industry, 1920–1931. *Journal of the American Statistical Association*, Dec., 1932, Vol. 27, p. 383–400.

"The analysis described in this paper was undertaken in an attempt to devise a statistical procedure which would afford an approximate measure of two of the more important types of employment fluctuations: those due principally to changes in the physical volume of output, and those which can be ascribed chiefly to changes in technological and managerial efficiency."

UNEMPLOYMENT INSURANCE

BRANDEIS, ELIZABETH AND PAUL RAUSHENBUSH. Wisconsin's unemployment reserves and compensation act. *Wisconsin Law Review*, Apr., 1932. Vol. 7, p. 136–145.

Analysis of the new law by two University of Wisconsin professors. The analogy between the problems of administration of workmen's compensation and unemployment insurance is pointed out.

Define attitude on unemployment insurance *Journal of Electrical Workers and Operators*, Oct., 1932, Vol. 31, p. 486, 516.

Findings of insurance companies point to need of noncommercial agency to assume responsibility for protecting jobless.

EWING, JOHN B. (University of Oklahoma). Uncontested claims under unemployment insurance. *American Federationist*, Dec., 1932, Vol. 39, p. 1390–1400.

A study of the decisions and claims made under the unemployment insurance law in Great Britain and of the provisions in the Wisconsin law which are comparable to the English cases already decided.

Individual or pooled reserves for unemployment. *Service Letter on Industrial Relations*, New Series, No. 95, Nov. 30, 1932, p. 469–472.

A review of general opinion on the subject of financing unemployment insurance other than by federal and state management. Presents the various aspects of the problem in some detail.

Supplementary unemployment insurance and pension schemes in English industry. *Monthly Labor Review*, Dec., 1932, Vol. 35, p. 1299–1301.

The provisions of two industries are summarized: wool textile and milling. These schemes also include pensions, illness and accident benefits.

UNEMPLOYMENT RELIEF

WOLMAN, LEO (Professor of Economics, Columbia University). Problem of unemployment. *Proceedings of the Academy of Political Science*, Jan., 1933, Vol. 15, p. 67-73.

Surveys briefly and pessimistically the measures used to relieve unemployment in the present and past depressions, particularly the use of public works. The article ends with the sentence "the issues henceforth to be considered are not whether unemployment insurance is essential and practicable, but what form we desire it to take and what safeguards for its efficient and intelligent administration we wish to create.

WAGES

New York State Labor Department—Division of Statistics and Information. Office workers' earnings. *Industrial Bulletin* (New York), Nov., 1932, Vol. 11, p. 430, 448.

An annual study based on returns from eleven industries. Gives average weekly earnings for October from 1923 to 1932.

Union scale of wages and hours of labor in 1932. *Monthly Labor Review*, Nov., 1932, Vol. 35, p. 1151-1161.

Annual review. Part I, preliminary report for selected cities appeared in the September, 1932, issue of the Monthly Labor Review on p. 637-663. There is also a section showing trend from 1907 to 1932 for an average of all trades. For 1931 and 1932 the figures are given for each of eight trades with an average for all trades.

WORKMEN'S COMPENSATION

Workmen's compensation—analysis of the laws of the state and territories of the United States. *Industrial Medicine*, Oct., 1932, Vol. 1, p. 28-31.

A useful tabulation giving for each state: year effective; carriers; exemptions; waiting period; weeks of disability requiring payment from date of injury; maximum benefits; maximum medical benefit.

Workmen's compensation legislation of 1932. *Monthly Labor Review*, Nov., 1932, Vol. 35, p. 1088-1090.

Only four states took action on workmen's compensation in 1932: Massachusetts, New Jersey, New York and Virginia. The important points in the new laws are quoted.

News Notes

AMERICAN FEDERATION OF LABOR RECOMMENDS UNEMPLOYMENT RESERVES LEGISLATION

The American Federation of Labor submits to the readers of the *Journal* the following statement concerning unemployment insurance or reserves.

In August 1932 the unemployment estimate of the American Federation of Labor reached the new high peak of 11,460,000. It was only too clear that those who controlled jobs would not provide employment during the coming winter and that there was no prospect of a coördinated industrial program to turn the tide.

In its 1931 convention the Federation declared Labor must have jobs or relief. Since industries had not voluntarily set up controls to assure workers steady employment, social control must be provided. An obvious road to relief was unemployment reserves through legislation. The Executive Council desired a federal draft bill so that regulations might be uniform throughout industry, but the constitutional difficulties seemed prohibitive.

The President of the Federation asked a number of experts to assist him in drafting recommendations on unemployment insurance. These three fundamental principles were recommended: (1) the right to become a member and continue membership in a trade union should be protected; (2) payment of relief should be a fixed charge on industry; (3) unemployment insurance should be compulsory and its administration within the control of state or federal government.

Rather than declare for either the reserves or the insurance system, the Federation thought it wiser to allow for a period of experimentation. An insurance plan was under consideration in Ohio with favorable chances for enactment, while Wisconsin had adopted the reserves plan. The latter was also to be recommended in Massachusetts. Accordingly, the Federation did not draft a model bill but recommended certain standards.

A flat rate of not less than 3 per cent of the pay roll, paid by all employers regardless of industry, was recommended as the basis for setting up a fund. Accumulating data and experience may disclose how to graduate scales for hazards. Funds should be invested in federal securities or bonds of states and such municipalities as have never defaulted.

The recommendation covering eligibility was carefully worked out in a form for inclusion in proposed legislation:

"*Eligibility for Benefits.* Insurance in general should cover temporary and involuntary unemployment. Unemployment means the conditions caused by the inability of an employee who is capable of and available for employment to obtain work in his usual employment or in another for which he is reasonably fitted. Nothing in the unemployment compensation act should require an employee to accept employment, nor should any employee forfeit his right to benefits under the act by refusing to accept employment under any or all of the following conditions:

(a) In a situation vacant directly in consequence of a stoppage of work due to a trade dispute;

(b) If the wages, hours and conditions offered are less favorable to the employee than those prevailing for similar work in the locality, or are such as tend to depress wages and working conditions;

(c) If acceptance of such employment would abridge or limit the right of the employee either (1) to refrain from joining a labor organization or association of work-

men, or (2) to retain membership in and observe the rules of any such organization or association.

(d) Workers who quit work without good cause or who are discharged for misconduct shall not thereby forfeit benefits beyond a reasonable period."

Unemployment insurance should cover as many workers, both manual and clerical, as possible. The amount and duration of benefits must depend on local conditions and are not specified in the Federation recommendations. For partial unemployment, payment of the benefit for total unemployment minus one-half the wages actually received is recommended as a fair principle.

Claim to unemployment compensation shall be recognized as a legal right growing out of previous employment. Receipt of payments shall not entail loss of suffrage or other civil rights.

Costs of administration should be borne by the unemployment fund. Administration is vitally connected with public employment exchanges which should be taken over, extended or created where they do not exist. The Administration should be a state commission on which Labor and Management are equally represented. Labor should select its representation through its own organizations.

Finally the Federation urges that unemployment compensation plans seek to stimulate regularization of employment. Pending the adoption of compulsory state unemployment insurance the Federation believes it vital that voluntary unemployment funds be made subject to state regulation.

INCREASED DEMAND FOR LIBRARY SERVICE

According to a statement by the American Library Association, more people used libraries, more books were borrowed from libraries and more books were used in library reading rooms in 1932 than ever before. Economic and social insecurity has led men and women to attempt to understand through reading the fundamental and current problems which confront them. Books on the business of earning a living are in great demand. So also are the books of many kinds which contribute to the maintenance of a spirit of hope. Thus, the libraries of the country are doing a great service in filling constructively the time of the involuntarily unemployed. Not so well known, but also important, is the vast amount of informal vocational counseling done by many librarians.

RESEARCH STUDIES IN EDUCATION

The fifth annual *Bibliography of Research Studies in Education* has recently been released by the United States Department of the Interior. It lists and briefly describes forty-four hundred unpublished and published educational research studies completed during 1930–1931. Obtainable from the Superintendent of Documents, Washington, D. C.

SURVEY OF ADULT TECHNICAL EDUCATION

A valuable *Survey of Adult Technical Education in the New York Industrial Area* has recently been published by the Chamber of Commerce of the State of New York. The survey was directed by O. W. Eshbach. An important section reports a thorough canvass and investigation of facilities for various kinds of adult technical education. Schools and courses are listed. Results are reported also of a study of the effectiveness of evening technical education, and a study of industrial conditions in relation to problems of technical education.

THE ENGINEERING FOUNDATION

Depression, Education and Morale

Roughly a third of our country's professional engineers and assistants are disengaged, or practically so. To help some of these men in bearing the stress of idleness, advanced courses of instruction are being given in Engineering Societies Building, on 39th Street, in New York. To improve professional equipment as well as to maintain morale this educational experiment was undertaken by The Engineering Foundation for the local sections of the national societies of Civil, Mining, Mechanical and Electrical Engineers, with the assistance of

their Professional Engineers' Committee on Unemployment.

Six courses were begun on 9 January and will be continued until the end of May. They are specially designed for the present need and differ in several respects from the usual college courses. The subjects are Power Plant Engineering, Business Finance, Building Equipment, Applied Electricity, Sales Engineering, and Industrial Management. Attendance in the various classes range from 65 to 210. Because of a large number of requests, four additional shorter courses are also being undertaken. Their subjects are Vocational Readjustment, Concrete Structures, Construction Planning, and Development of Inventions.

These courses are possible only through the cordial coöperation of the colleges and universities in the New York-New Jersey metropolitan area: Columbia University, New York University Schools of Commerce and of Engineering, Polytechnic Institute of Brooklyn, Stevens Institute of Technology, and College of the City of New York. The course on Vocational Readjustment is being arranged by the Personnel Research Federation with headquarters in Engineering Societies Building. Important also is the individual coöperation of a number of engineers, some of them among the disengaged, and of members of the teaching staffs of the institutions named. Other engineers have contributed the money for incidental expenses. No charges are made to the disengaged engineers.

The foresight of those who have so ably coöperated in organizing these special courses and the faith of the engineering profession in the future of American institutions have both been confirmed to a marked degree by the interest already demonstrated in this work. Applications for the several courses disclose that engineers ranging from 24 to 63 years of age and representing 33 North American and 12 foreign universities were anxious to broaden their training and lay a better foundation for future work in the engineering field. Approximately 500 engineers, chiefly members of engineering societies, have registered for the courses.

A number of the engineers who are being benefited by attending the courses have expressed their appreciation of the opportunity to broaden their training and have found that the pursuit of definite study has served to relieve their minds of the fruitless worries experienced during the period of involuntary idleness.

These courses for disengaged engineers are an interesting example of coöperation, self-help and service by professional societies to their members in a time of unusual need.

—*Alfred D. Flinn*